

The Archaeology of Ancient Indian Cities

DILIP K. CHAKRABARTI

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To
the memory of
NIHARRANJAN RAY,
from a recalcitrant student

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Preface

This book offers a systematic evaluation of archaeological data on the early urban history of India. It does so in terms of two major periods (protohistoric and early historic, coming down to about AD 300 and later) and all major areas of the subcontinent from where some data are available. In the process the book discusses some of the cardinal issues of South Asian archaeology—the problems of the origin and decline of the Indus civilization; the issue of its merger in the main flow of India's later cultural development; the archaeological basis of its long chronology; aspects of the Indus urbanism; the reason for the growth of neolithic-chalcolithic communities in all major agricultural regions of the subcontinent, especially inner India; the patterns and problems of urban growth in the early historic period on the subcontinental scale, etc. In each case the concern is with understanding the situation at the grassroots level within an essentially South Asian framework. In fact, this may be the first work which puts forward a cogent and well-argued case for a totally indigenous framework for the archaeological cultural development of the subcontinent from the period of the Indus civilization onwards. If this work leads, among other things, to detailed research on the settlement perspectives of different areas, I shall consider my work useful.

This work has its origin in my Ph.D. dissertation, 'Early Urban Centres in India, an Archaeological Perspective, c. 2500 BC–c. AD 300', submitted to the University of Calcutta in 1972 under the supervision of the late Professor Niharranjan Ray. The present work was written in 1992–93 and the fact that the task was not put off further was due to the insistence of Dr Nayanjot Lahiri, to whom I am extremely grateful.

In a work of this kind the list of references and illustrations is almost endless but I have tried to keep it to the minimum.

Chapter One

Introduction

The more purposeful academic attempts to understand ancient Indian cities like those of C.P.V. Ayyar (1915) and B.B. Dutt (1925) were based essentially either on the traditional Indian principles of the modes of urban layout as embodied in different Vastusastra texts (for a comprehensive analysis, see T. Bhattacharya, 1963) or on the old literature (the old Tamil literature in the case of Ayyar). Though not in the form of a monograph, A.K. Coomaraswamy (1930, 1931) attempted an analysis of the early historical cities of India and their associated architecture primarily on the basis of the *Jatakas* and other Buddhist texts and different representations of cities, palaces and houses in early Buddhist art. In later years the books by Stuart Piggott (1945), Amita Ray (1964), U.N. Roy (1965) and B.N. Puri (1966) contained much that was relevant to the theme.

The modern archaeological interest in the investigation of the phenomenon of early Indian cities dates from 1972–73 when, on the basis of my Ph.D. dissertation completed at Calcutta University in 1972, I published two articles, one trying to analyze the concept of urban revolution in the Indian context and the other trying to delineate the main political phases of India's early historic urban growth (Chakrabarti 1972–73, 1974). The first of these articles had also the privilege of being commented on by several leading Indian archaeologists including A. Ghosh who published soon afterwards a full-length study on this topic entitled *The City in Early Historic India* (A. Ghosh 1973). Although this volume by one of the most important archaeologists of post-Independence India contains a deep insight into various issues linked to the growth of early historic Indian cities, a detailed and region-by-region discussion of archaeological data was not within its scope, nor was it concerned in detail with the physical features of these cities. In 1981 V. Thakur (1981) published a book entitled *Urbanisation in Ancient India* where the focus was more general

and literary than archaeological and specific. In 1984 Kameshwar Prasad (1984) published *Cities, Crafts and Commerce under the Kushans* which cited the archaeological data on cities of the early centuries AD. In 1986 M. Lal (1986) tried to examine the role of iron in the clearance of forests and the growth of cities in the Gangetic valley on the basis of his two earlier publications on the subject (M. Lal 1984a 1984b). In 1987 R.S. Sharma (1987) in his *Urban Decay in India (c. 300–c. 1000 AD)* tried to argue that the early historic cities of the country declined along with the decline of trade economy which reached its high water-mark during the Kushan period. In 1988 G. Erdosy (1988) assessed the problem of urbanization in early historic India against the background of his studies on the ancient settlement in the Allahabad–Kausambi region. In the same year I added some comments on 'the phenomenon of urbanization' in my book *Theoretical Issues in Indian Archaeology* (Chakrabarti 1988a) and on the rural-urban dichotomy in ancient India in a volume published by the Department of Ancient History and Archaeology of Allahabad University (Chakrabarti 1988b). In 1989 F.R. Allchin (1989) published an article entitled 'City and State Formation in Early Historic South Asia' which he followed up with an article published in 1990 entitled 'Patterns of City Formation in Early Historic South Asia' (Allchin 1990). In the field of ancient textual studies a significant contribution was made by K.T.S. Sarao (1989, 1990), especially in his *Urban Centres and Urbanisation as Reflected in the Pali Vinaya and Sutta Pitakas* (Sarao 1990).

This research survey may not be exhaustive but it serves the purpose of narrating the broad trend of urban studies in the context of ancient India.

Among modern sociologists K. Davies (1966) has asserted that 'the earliest urban centres are called "cities" mainly by the courtesy of the archaeologists' (Davies 1966: xi). In relation to their modern counterparts they were incomparably small, with a maximum of a few thousand inhabitants; they were what Davies (1966: xi) calls 'mere urban islands in a vast sea of rurality'. However the criteria of urbanism as a way of life proposed by L. Wirth (1938: 8), i.e. size, density and heterogeneity, hold true in both the ancient and modern contexts, and though affecting only a small part of the country's total population, these early cities, once they came into being, were repositories of what Robert Redfield (1963: 41–2) characterizes as the 'Great Tradition' of their respective civilizations. There is much truth in Oswald Spengler's remark, 'every spring time of a culture is *ipso facto* the spring time of a new city-type

and civism' (Spengler 1954: 91), or that of Redfield, 'cities remain the symbols and carriers of civilization wherever they appear' (Redfield 1962: 327).

As early as in the beginning of this century, Emile Durkheim (1900, 1964 reprint: 361) suggested as one of the tasks of the sociologists to investigate 'what circumstances give birth to villages and then to cities, and from what the development of urban centres derives'. However, theoretical concern with the first urban growth in the history of the world was not clearly manifest in archaeological literature till V. Gordon Childe in his book *Man Makes Himself*, first published in 1936, coined the term 'Urban Revolution' to emphasize its importance and formulated a theoretical scheme to account for its occurrence (Childe 1941: chapter 7). In 1950 he delineated the basic features of the civilization accompanying the first urban growth on the basis of archaeological data. Thus, the study of urban growth in archaeological literature is initially linked to the writings of Childe.

His theoretical scheme to account for the first urban phenomena laid stress on technology as its prime force:

The thousand years or so immediately preceding 3000 BC were perhaps more fruitful in inventions and discoveries than any period of human history prior to the sixteenth century AD. Its achievements made possible that economic reorganization of society that I term the Urban Revolution (Childe 1952: 69).

Among these inventions the copper-bronze metallurgy, 'the first approximation to international science', as Childe calls it (1952: 78), was the most important. In addition, there was the invention of the wheel and wheeled transport, sailboats, ploughs, etc. The period was also characterized by an expanded foreign trade, a logical outcome of the development of metallurgy 'demanding diverse ores from diverse regions and the beginning of the exact sciences like astronomy which was obviously bound up with extensive plough agriculture calling for a knowledge of seasonal variations. The comparative self-sufficiency of the earlier peasant communities broke down and the way was paved for the development of a new settlement pattern and a new arrangement of society.

Childe (1950) further suggested ten traits of urban revolution: (1) a new magnitude of human settlement, (2) the central accumulation of capital through tribute and taxation, (3) monumental public works, (4) the art of writing, (5) the beginning of the exact and predictive sciences like arithmetic, geometry and astronomy, (6) a greatly expanded foreign trade

implying the development of economic institutions, (7) the growth of full-time specialists in different crafts such as metal-working, (8) a privileged ruling class, (9) the birth of a state or organization of society on the basis of residence instead of or on top of the basis of kinship, and (10) the reappearance of naturalistic art.

An alternative approach to urban studies in archaeology soon became evident in the writings of the Chicago school of oriental archaeologists. In 1950 in his book *The Near East and the Foundations for Civilization* R.J. Braidwood (1950: 41) characterized civilization in eight ways which did not differ significantly from the indices offered by Childe: (1) fully efficient food production, (2) cities, urbanization, (3) formal political state, (4) formal political laws—a new sense of moral order, (5) formal projects and works, (6) classes and hierarchies, (7) writing, and (8) monumentality in art. However, in the same publication, Braidwood (1950: 42) wrote the following:

We do not believe there was a second change in kind in the technologico-economic realm as civilization and the pre-civilizational phases of food-production were differences in degree. This emphasis on cultural growth and process as civilization appeared makes our interpretation different from that of Childe. . . . The great change between pre-civilization and civilized human life came in those realms of culture other than the technological and economic.

This set the tone of subsequent writings on the issue by archaeologists and other scholars throughout the fifties and sixties. Whether or not writing was an index of civilization and cities came to be hotly debated in the context of the 'pre-pottery A' stage of Jericho in the eighth millennium BC. Kathleen Kenyon (1956) and Mortimer Wheeler (1956) assigned an urban status to this level of the site on the basis of its monumental architecture which comprised a rock-cut ditch and a stone wall with round towers and inner stairways for manning the defences around the settlement. This was criticized by Braidwood (1957) and Childe (1957) but the same problem arose in the mid-sixties when James Mellart decided to describe the neolithic Catal Huyuk (c. 6500 BC) as the 'world's oldest city' (Mellart 1966, 1965).

Another issue which agitated scholars was the suitability of the term itself. They could not be sure if the change was as precipitous as Childe's use of the term 'revolution' would imply. Lewis Mumford in his *The City in History* (Mumford 1961: 51) points out that though

the term does justice to the active and critically important role of the city it does not accurately indicate the process, for a revolution implies turning things upside

down, and a progressive movement away from outworn institutions that have been left behind. . . . The rise of the city, so far from wiping out earlier elements in the culture, actually brought them together and increased their efficiency and scope.

H. Frankfort (1951: 38, fn 3) objects to the word because he believes that by its use 'an impression of violent, and especially of purposeful change is made which the facts do not suggest'. R. Redfield (1962 ix) accepts the word 'revolution' but 'with hesitation' and prefers 'transformation' instead. Glyn Daniel (1968: 26) suggests the use of the word 'synoecism'. Childe (1958: 89) himself admits that 'the process is so finely divided in the successive building levels that it seems arbitrary to fix the exact critical point at which quantity passed over into quality, when the Revolution was accomplished'. While analysing the ancient Egyptian centres J. A. Wilson (1963: 34) has even gone to the extent of arguing that 'one may accept a truth in Childe's "Urban Revolution" provided that it is understood that it was not "urban" and was not a "revolution"'. However, as R.M. Adams (1965: 9) points out, the term has its advantages. 'Among its important advantages are that it places stress on the transformative character of the change, that it suggests at least relative rapidity, and that it specifies a restricted, urban locus within which the process was concentrated.'

The third issue was related to the enumeration of the ten traits associated with urban revolution by Childe. This enumeration, according to Adams (1965: 10), gave us a 'mixed bag of characteristics'. Among the features listed by Childe, monumental architecture could have existed—and, in fact, did exist—in non-civilized contexts. The trait like the beginning of the exact and predictive sciences may be 'largely matters of interpretation from evidence that is at least fragmentary and ambiguous' (Adams 1965: 11). Generally speaking, these indices were the results of a cumulative process where, apart from the distinctions in degree, the distinctions in kind are hard to arrive at. And not all of them seem to have been equally significant either. For instance, Redfield (1965: 24) is doubtful of the significance of the re-appearance of naturalistic art. So is Adams (1965: 11): 'its initial appearance, in so far as it deals with the human figure—for example, is at least not immediately apparent'. He goes on to write:

A more basic objection to any such listing is that its eclecticism embraces fundamental contradictions as to purpose. Childe echoes Morgan in seeking to identify the Urban Revolution by a series of traits whose vestiges the specialist can conveniently recognize. This was a reasonable procedure for Morgan's

purpose, the initial delineation of a succession of stages, but with Childe, on the other hand, we enter an era in which emphasis shifted toward providing accounts with explanatory powers as well (Adams 1965: 11).

In brief, what Adams (1965: 11) seeks to emphasize is that the term Urban Revolution implies a focus on 'ordered systematic processes of change through time' and as such its identifying characteristics 'need to be more than loosely associated features'.

The final issue of controversy in this field in the mid-sixties and earlier, centred around the problem of the urban growth-process, and in this field too Adams was emphatic in his criticism of Childe's idea. Following Braidwood who disputed the assumption of the supremacy of the technological factor in the process of urban revolution, Adams (1960a: 153) characterized urban revolution as 'pre-eminently a social process'. Agricultural surplus was necessary but 'its essential element was a whole series of new institutions and the vastly greater size and complexity of the social unit, rather than basic innovations in subsistence' (Adams 1960a: 154). To prove his point Adams (1960b: 31-2) further argued that metallurgy came to be fully developed in Early Dynastic Mesopotamia only when cities were already a normal feature of Mesopotamian social life. He also posed the problem of Egypt where the decisive stage of early Pharaonic power was accompanied by 'little more in the way of technological superiority, in other words, may have had little to do with the processes which brought the city into being'. In a similar vein Mumford gave precedence to social-institutional changes and argued that it was the institution of kingship which was the most important single factor in the establishment of cities. In his concluding address at a symposium on urbanization and cultural development in the ancient Near East held at the Oriental Institute of Chicago University in 1958 he argued: 'I suggest that the key-agent in the foundation of the early city is the king and that one of the attributes of Ptah, that he founded cities, is in fact an all but universal attribute of kings' (Mumford 1960: 233).

Although T. Jacobsen (1960: 243) commented that the king as a city-builder appeared later in Egyptian literary records, a general association between the foundation of cities and the state-power is widely accepted. For instance, in the context of south Turkmenia, V.M. Masson (1968) felt that it was preferable to give priority 'not so much to a process of urbanization but to the emergence of a stratified society as an essential element in the process of social change in prehistory'. It may also be added here that the notion of technology-induced surplus leading by itself, outside any social-institutional framework, to social change was questioned quite early by H.W. Pearson (1957).

Since the early seventies two trends have increasingly become significant in this field of archeological study. The first one is rooted in attempts to study early urban centres in their settlement perspectives whereas the second one has tried to understand the early urban growth process through the application of a systems theory. A major milestone in the history of the settlement approach is the publication of *Man, Settlement and Urbanism* (Ucko, Tringham and Dimbleby 1972), the result of a London seminar on settlements and urbanization in 1970. In the context of ancient Mesopotamia the more modern studies from this point of view include R.M. Adams' *Heartland of Cities, Surveys of Ancient Settlement and Land Use on the Central Floodplain of the Euphrates* (Adams 1981) and H.J. Nissen's *The Early History of the Ancient Near East. 9000-2000 BC* (Nissen 1988). Nissen draws attention to the concept of the centre and surroundings and explains the reasons why (Nissen 1988: 10):

The terms village, city, and state, which are normally used in the archaeological literature, are so changeable that one would really prefer to do without them. Their definition becomes easier if we follow the example of settlement researchers, who assess the importance of a settlement by its relationship to its (settled) surroundings. The main terms that must then be used are centre and surroundings, which together form a compact system, insofar as both parts of a settlement system are permanently dependent on each other.

A concise discussion on the significance of the systems theory in this context is offered by Colin Renfrew in *Approaches to Social Archaeology* (Renfrew 1984: especially 248 ff) and Renfrew and Paul Bahn in *Archaeology, Theories, Methods and Practice* (Renfrew and Bahn 1991: 421 ff). In the chapter on 'culture systems and the multiplier effect' in *Approaches to Social Archaeology* one of the citations Renfrew gives as an introduction to the theme of the chapter is from Kent Flannery:

It is vain to hope for the discovery of the first domestic corn cob, the first pottery vessel, the first hieroglyphic, or the first site where some other major breakthrough occurred. Such deviations from the pre-existing pattern almost certainly took place in such a minor accidental way that these traces are not recoverable. More worthwhile would be an investigation of the mutual casual processes that amplify these tiny deviations into major changes in prehistoric culture (cited in Renfrew 1984: 258).

The basic advantage of this systems approach or thinking may also be best expressed in Flannery's words:

For one thing it does not attribute cultural evolution to 'discrepancies', 'inventions', 'expressions' or 'genius', but instead enables us to treat prehistoric

cultures as systems. It stimulates enquiry into the mechanisms that counteract change to amplify it, which ultimately tells us something about the nature of adaptation. Most importantly, it allows us to view change not as something arising *de novo*, but in terms of quite minor deviations in one overall part of a previously existing system, that once set in motion can expand greatly because of positive feedback (cited in Renfrew 1984: 267).

Renfrew's own case-study is in the context of the third millennium BC. Aegean where he broke the components of the six subsystems (subsistence, technological, social, cognitive/projective, external exchange, population) of culture into many detailed and specific formulations which he described as 'factors and interactions in the third millennium Aegean'. Change towards the origin of the state and civilization came as a result of the 'multiplier effect' where two subsystems entered 'into a mutual deviation-amplifying relationship' overcoming 'the innate conservative homeostasis of culture' and eventually leading to a morphogenesis or the emergence of totally new forms.

This certainly is a major analytical method which makes possible the appreciation of cultural change within the internal framework of that culture itself without taking recourse to such plainly crude assumptions as ethnicity, diffusion, etc., which has often been the case in the Indian context.

... the approach does offer a practical framework for the analysis of the articulation of the various components of the society. And it does lend itself very readily to computer modelling and simulation (Renfrew and Bahn 1991: 422).

As far as the earlier controversy between Childe and the Chicago school regarding the primacy or otherwise of technological factors is concerned, Renfrew could offer pertinent comments from the point of view of the 'systems thinking':

Since civilization, with its artificial environment, does imply some specialization, every civilization must have an economy which has progressed in some sense beyond a subsistence economy. But this does not mean that the growth of civilization was 'caused' by improved food production techniques, which may indeed in some cases have long been available. In many cases, I suggest, it did in fact come about through innovations in such techniques coupled with social and other developments which at the same time made these subsistence improvements both possible and desirable (Renfrew 1984: 277).

From this point of view he finds Adams' primary emphasis on transformation in the realm of social organization as a point of view tending

towards the other extreme, as opposed to the primacy of the technological factor.

we shall not expect the archaeological record for the early development of a civilization to show greatly improved production techniques (e.g. irrigation) and 'surplus' storage facilities arising prior to, or without evidence of social stratification (e.g. palaces) or religious specialization (e.g. temples). Nor shall we, in the cases where the successful transition to civilization was later accomplished, expect these social and religious advantages to have developed markedly without developments also in food production. On the contrary, the two were linked by the multiplier effect, and it was their coupled expansion which led to rapid changes in the culture in general (Renfrew 1984: 278).

As a methodological proposition 'systems thinking' is certainly attractive because this in a sense takes our attention away from the invocation of sundry external causes. A culture becomes something to be understood in terms of the culture itself. Renfrew, for instance, tries to account for the birth of the Early Bronze Age Cycladic civilization by underlining the possible multiplier effect caused by vine cultivation which was linked to the manufacture of drinking vessels and, at a remove, religion; or by the production of, and trade in, daggers which was related to the development of better boats, the longships. But perhaps what is more significant in such contexts is not the solution of the initial problem itself but the building up, bit by bit, of what is called the 'system trajectory' covering the six subsystems. Depending on the quality and quantity of the data available this can be a valuable exercise in the explanation of any cultural change in the past. In the context of prehistoric Baluchistan, Jim Shaffer (1978) attempted this, and although this did not lead to any particularly path-breaking conclusions, it made possible the appreciation of the prehistoric Baluchi situation within the framework of Baluchistan itself. More recently, Erdosy (1988: 87 ff), in his discussion on 'the emergence of civilization' in the Gangetic valley, apparently accepts the logic of systematic thinking, but as far as I can understand it, he does not attempt at any point to build up or outline the 'system trajectory' in the context of the Gangetic valley. On the contrary, he refers to such issues as internal or external stresses, 'late Vedic society in archaeology', 'the Indo-Aryan contribution', etc.—in fact, the kind of issues which, one would have thought, formed no part of 'systematic thinking'. This is a good example of what Paul Courbin (1988: 35) expressed by writing, 'practice contrasts with the theory that has been repeated a thousand times', and has regrettably added nothing to his otherwise laudable settlement survey of the Allahabad district.

My aim in the present work is to undertake a study of the cities of the Indus civilization and the subsequent early historic phase in different parts of India through an analysis of their background, physical features and historical contexts. Some theoretical ideas regarding early urban growth have been incorporated in this chapter as a general methodological backdrop to the Indian situation. The various debates specific to the Indian situation will be taken up in their appropriate contexts, and if any theoretical preferences are expressed here, it is due to the belief that the appearance of writing in the historical and archaeological records is a crucial dividing line between the pre-urban and urban situations in a given cultural context. I am aware that the appearance of writing was not a sudden or arbitrary event (Schmandt-Besserat 1992) but that does not make the appearance of literati as a class less significant. Secondly, I do not propose to offer any specific definition of a 'city', although the criteria of size, density, the presence of literati, various crafts specializations, etc., will be borne in mind when surveying the mass of Indian archaeological data in different regions. I have tried to take into consideration the settlement distributions of various periods and areas and to relate the 'cities' to these distributions. Despite the lack of definite knowledge, discussions along this line would, if nothing else, serve to pinpoint the lacunae in our understanding of the subject.

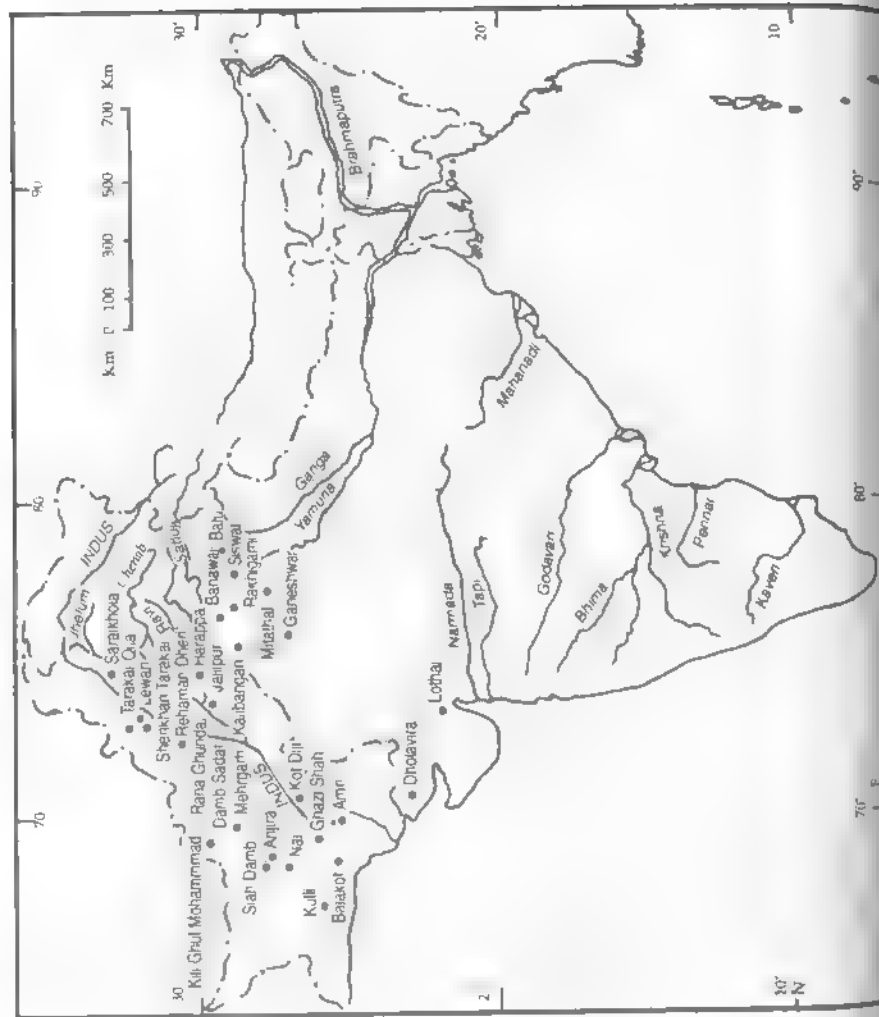
Chapter Two

Background and Origin of the Indus Civilization

BACKGROUND

The circumstances of the discovery and the first announcement of the Indus civilization (Chakrabarti 1988) do not concern us here. What does concern us here, especially to appreciate how the study of the background of this civilization has proceeded since then, is what John Marshall, the man who organized the first systematic phase of excavations at the Harappan sites, wrote while editing the first major report on that work *Mohenjodaro and the Indus Civilization*. In his introduction to this three volume report he wrote extensively on the distinct and unique character of the civilization, taking care to point out how it corresponded in its general features with the 'Chalcolithic cultures of Western Asia and Egypt'.

In other respects, however, it was peculiar to Sind and Panjab and as distinctive of those regions as the Sumerian culture was of Mesopotamia or the Egyptian of the Valley of the Nile. Thus to mention only a few salient points, the use of cotton for textiles was exclusively restricted at this period to India and was not extended to the Western world until two or three thousand years later. Again there is nothing that we know of in prehistoric Egypt or Mesopotamia or anywhere else in Western Asia to compare with the well built houses and commodious houses of the citizens of Mohenjodaro. In those countries, much money and thought were lavished on the building of magnificent temples for the gods and on the palaces and tombs of kings, but the rest of the people seemingly had to content themselves with insignificant dwellings of mud. In the Indus valley, the picture is reversed and the finest structures are those erected for the convenience of the people. Temples, palaces and tombs there may of course have been, but if so, they are said to have been discovered or so like other edifices are not to be readily distinguishable from them. At Ur, it is true, Mr Woolley has unearthed a group of moderate sized houses of burnt brick which constitutes a noble exception to the general rule, but these disclose such unmistakable signs of the small and rather loosely built structures of the latest levels at Mohenjodaro, that there can be little doubt as to the influence under which they were erected. Be this,



however, as it may, we are justified in seeing in the Great Bath of Mohenjodaro and in its roomy and serviceable houses, with their ubiquitous wells and bathrooms and elaborate systems of drainage, evidence that the ordinary towns people enjoyed here a degree of comfort and luxury unexampled in other parts of the men civilized world

Equally peculiar to the Indus Valley and stamped with an individual character of their own are its art and religion. Nothing that we know of in other countries at this period bears any resemblance, in point of style, to the miniature faience models of rams, dogs and other animals or to the intaglio engravings on the seals, the best of which—notably the humped and short-horned bulls—are distinguished by a breadth of treatment and a feeling for line and plastic form that has rarely been surpassed in glyptic art, nor would it be possible, until the classic age of Greece to match the exquisitely supple modeling of the two human statuettes from Harappa. In the religion of the Indus peoples there is much of course, that might be paralleled in other countries. This is true of every prehistoric and protohistoric regions as well. But, taken as a whole, their religion is so characteristically Indian as hardly to be distinguishable from still living Hinduism or at least from that aspect of it which is bound up with animism and the cults of Siva and the Mother Goddess—still the two most potent forces in popular worship. Among the many revelations that Mohenjodaro and Harappa have had in store for us, none perhaps is more remarkable than this discovery that Saivism has a history going back to the Chalcolithic Age or perhaps even further still, and that it thus takes its place as the most ancient living faith in the world (Marshall 1931: vol. I, vi-vii)

He further goes on to write:

One thing that stands out clear and unmistakable both at Mohenjodaro and Harappa is that the civilization hitherto revealed at these two places is not an incipient civilization, but one already age old and stereotyped on Indian soil, with many millennia of human endeavour behind it. Thus India must henceforth be recognized, along with Persia, Mesopotamia and Egypt, as one of the most important areas where the civilizing processes of society were initiated and developed. I do not mean to imply by this that India can claim to be regarded as the cradle of civilization, nor do I think on the evidence at present available that that claim can be made on behalf of any one country in particular. . . . In each of these river valleys, on the banks of the Nile and the Euphrates as on those of the Karun, the Helmand or the Indus, mankind may be assumed to have had equal chances of development, and it is natural to suppose that progress in one direction or another was being made in all these regions simultaneously and doubtless in many others besides. If this view, which is surely the most rational one, be accepted, if we regard this wide-flung civilization of the Afrasian belt as [emerging] in various centres and developed by the mutual efforts of different peoples, we shall better understand how, despite its general homogeneity, it

nevertheless comprised many widely differing branches, each of which, in its own sphere, was able to maintain its local and individual character (Marshall 1931: vol. I, viii)

It is interesting to note that virtually the same sentiment was expressed by V. Gordon Childe. The civilization, according to him,

represents a very perfect adjustment of human life to a specific environment, that can only have resulted from years of patient effort. And, it has endured; it is already specifically Indian and forms the basis of modern Indian culture. In architecture and industry, still more in dress and religion, Mohenjodaro reveals features that have always been characteristic of historical India (Childe 1952: 183-4).

I consider it important to draw attention to these definitive statements made by Marshall and Childe on the distinctive and Indian character of the Indus civilization as a *civilization* (not as a tradition or culture) because this is exactly what is missing in the writings of many subsequent scholars. In their quest for its separate components and regional diversities they very often lose sight of the totality of this Bronze Age civilization which, despite being much larger than any of its contemporaries, is, because of the undeciphered status of its writing, the most ill understood of them all. The continuity of cultural development and the elements of regional diversity are no doubt important in the study of archaeological records but the status of these issues need not make us oblivious of the homogeneity and sheer splendour of this civilization which Marshall's statements so strongly evoke. In the preceding chapter I emphasized my support for the view that the presence of literati as proved by the existence of a writing system should be considered the ultimate dividing line between the pre-civilized and civilized or non-urban and urban contexts anywhere. From this point of view the nearest Bronze Age civilization to the west of the Indus was Elam or southwestern Iran with Susa as its centre. From this point of view again, there was no contemporary *civilization* in the Oxus valley or to the north of the Hindukush. From my point of view the Indus civilization formed a large, literate oasis in an unrelieved landscape of non-literate and hence 'barbarian' groups.

Even before Marshall's opinion that the Indus civilization 'must have had a long and antecedent history on the soil of India' (Marshall 1931: 106) was published, one of his own officers, Nani Gopal Majumdar, discovered, in the course of his prehistoric explorations in Sind (1929-31), evidence of at least a part of this 'antecedent history' at the site of Amri. On the basis of his excavations at the site Majumdar showed clear strati-

graphic evidence to argue that the Amri pottery 'should be looked upon as representing an earlier phase of the chalcolithic civilization than that represented by Harappa and Mohenjodaro' (Majumdar 1934: 27). Further evidence came from a few other sites, notably Ghazi Shah where the Amri ware belonged to the earliest period of occupation and co-existed for some time with the Indus civilization pottery till only the latter type was used (Majumdar 1934: 85). More than a decade later, Mortimer Wheeler (1947) found some pottery below the 'defences' of the AB mound at Harappa testifying to the presence of an earlier culture at the site.

In the fifties scholarly opinion on the origin of the Indus civilization varied from Stuart Piggott's sober statement that an origin outside India was 'inherently improbable' (Piggott 1950) to R. Heine-Geldern's reference to 'colonial cities' in the Indus context (Heine-Geldern 1956) or D.H. Gordon's idea of a piecemeal migration from Elam and Mesopotamia (Gordon 1958). In between these two opposing categories of thought was Wheeler's explanation in terms of A.L. Kroeber's concept of 'stimulus diffusion' (Kroeber 1940), which was first put forward in 1953 (Wheeler 1953: 93-4; repeated in two subsequent editions of this work in 1960 and 1968). There is no point in discussing Wheeler's theory in detail now (see Chakrabarti 1984); it will suffice to point out here that there is a contradiction between his premise of the migration of civilization from Mesopotamia to the Indus and his statement that the high-built citadels of Mohenjodaro and Harappa 'seem indeed to be frowning upon their cities with a hint of alien domination'. One must also note that it is from his time that the Indus civilization began to be conceived of as something fertilized by Mesopotamia in particular and West Asia in general. It is also interesting to observe that the Indian and Pakistani scholars of the period have barely commented on the background of this civilization except for pointing out, as B.B. Lal (1953) has done in his essay on protohistoric investigations in 1953, the gradually growing significance of chronologically earlier chalcolithic finds (cf. W.A. Fairservis's first report on the Quetta valley in 1952) in Baluchistan.

The work of the Indian and Pakistani scholars on this problem came into focus from the mid fifties onwards. In 1955 and 1957 F.A. Khan of the Pakistan Department of Archaeology excavated the site of Kot Diji near Karachi in Sind. A substantially thick deposit with evidence of a permanent settlement going back to a time earlier than the beginning of the Indus civilization was found here for the first time. It was further observed that certain ceramic shapes and designs and some miscellaneous ornaments (cf. terracotta 'cakes') continued from this phase into the phase of the

Indus civilization. However, there was also a burnt level between these two phases. The work soon gained support from the French work at Amri in Sind under J.M. Casal (1959-62) and the Indian work at Kalibangan in the dried up Ghaggar valley under B.B. Lal and B.K. Thapar of the Archaeological Survey of India, which began in 1960. Casal's work at Amri brought to light the ceramic and structural details of the 'Amri culture' at the site. The evidence of a 'transitional' phase between the Amri culture and the Indus civilization was also discovered here. A fortified 'pre-Indus' settlement with different house orientations from those of the succeeding 'Indus' phase occurred at Kalibangan where it was found that the 'pre-Indus' pottery continued alongside 'Indus' pottery for some time. As a result of this work it was now possible to understand the stratigraphic contexts of the ceramic material found by A. Ghosh in 1950-52 at some sites in the Ghaggar valley in Rajasthan. It was realized that the 'pre-Indus' Kalibangan pottery was found for the first time at Sothi (for a more recent note on Sothi, see Dikshit 1984) during Ghosh's explorations.

Thus it is obvious that by the early sixties some meaningful archaeological discussion on the background and origin of the Indus civilization was possible. This was provided by A. Ghosh in a seminar on the pre-history and protohistory of India, which was held at the Deccan College, Pune, from 24 May to 31 May 1964.

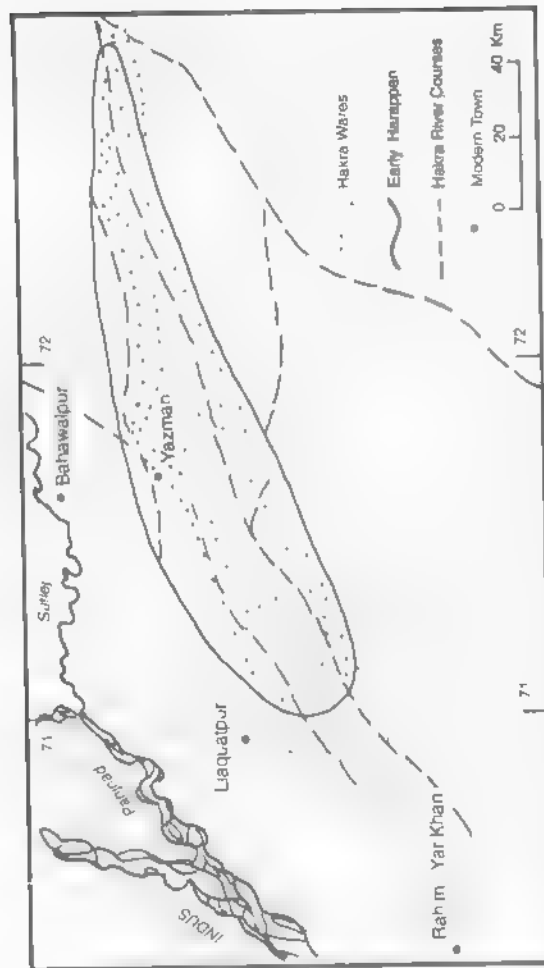
Ghosh began by pointing out that the pre-Harappan pottery of Kalibangan was identical with the Sothi pottery identified by him earlier in the Sarasvati-Drishadvati valley of Rajasthan. He further pointed out that this pottery was 'found mixed up with the Harappan pottery on the surface of practically all the Sarasvati-Drishadvati sites'. He also found this pottery to be 'analogous with the pre-defence (Periano-Ghundai) pottery of Harappa and also with that of the earlier (pre-Harappan) period of Kot Diji'. Some of the designs on this pottery were then compared with those on the pottery of the Quetta valley (Kile Gul Mohammad black on red slip; Kechi Beg black-on-buff; Quetta ware and Quetta wet ware), north Baluchistan (Sur Jangal coarse and painted wares), south Baluchistan (Mehi-Nundara) and the lowest excavated level of Mohenjodaro. It was also noted how some of its elements 'continued in the mature Harappa'—the fish-scale and the pipal leaf; the pottery with external ribbing; the external cord-impression, basins with deep incisions or shallow combings in the interior, the pre-citadel Harappan ring-stand paralleled by finds at Mohenjodaro; the short-stemmed dish-on-stand of Sothi, and a terracotta cake from the lower levels of Kot Diji. Ghosh came to this conclusion:

The occurrence of the Sothi ware, comparable in some details not only with the Zhob (Periano-Ghundai) but with Quetta and central Baluch industries, in the lowest levels at Harappa and Mohenjodaro, its abundance on practically all Harappan sites on the Sarasvati, the persistence of its traits in the Harappan pottery not only in the Sarasvati region but also at Mohenjodaro and Harappa, the co-existence of the Sothi and Harappan people at Kalibangan (KLB-2) and possibly also at Kot Diji—all this cannot be dismissed as accidental but on the contrary must have a bearing on the Harappan genesis. A firm Sothi substratum is obvious in the make-up of the Harappa—much firmer than that of the other earlier cultures. There is every justification for regarding the Sothi as 'proto-Harappan' (Ghosh 1965).

This is certainly a clearly formulated hypothesis which does Ghosh much credit. Much later this found its full expression in M. Ratiq Maghal's Ph.D. dissertation on 'The Early Harappan Period in the Greater Indus Valley and Northern Baluchistan (c. 3000-2400 BC)'.

The second part of Ghosh's argument deals specifically with the mechanism of origin and is linked to Wheeler's theory. The form of the civilization, he argued, was the result of a deliberate choice made by 'a few genius-dictators' who 'borrowed the idea of cities from the contemporary Sumerians' and promoted foreign trade and standardization to gain prosperity. In his own language, he postulated a 'highly artificial birth of the culture'.

George F. Dales in 1965 (Dales 1965) and W.A. Fairservis in 1967 (Fairservis 1967) tried to understand the proto-historic cultural growth in Baluchistan and the Indus system in terms of a few developing 'phases' (Dales) or 'stages' (Fairservis). Dales' Phase C was supposed to herald the first discernible period of settled village life in the area extending from Mundigak in south Afghanistan to the Quetta and Zhob-Loralai areas in north Baluchistan and the Kalat area of central Baluchistan. Both south Baluchistan and the Indus plain supposedly remained untouched. This phase was characterized by metal objects, progressive refinement of stone tools leading to the first parallel-sided blade industry, ground alabaster bowls, crude clay humped bull figurines and the development of a rich pottery industry. Settlements spread in the succeeding Phase D not merely to south Baluchistan (early phase of the Nal complex) but also to the Indus plain and north Rajasthan below and were characterized generally by the gradual elaboration and refinement of the earlier types. Phase E marked the transition from villages to towns with fortified citadels (Kot Diji, also Mundigak in south Afghanistan) while Phase F was taken to represent the Indus civilization itself.

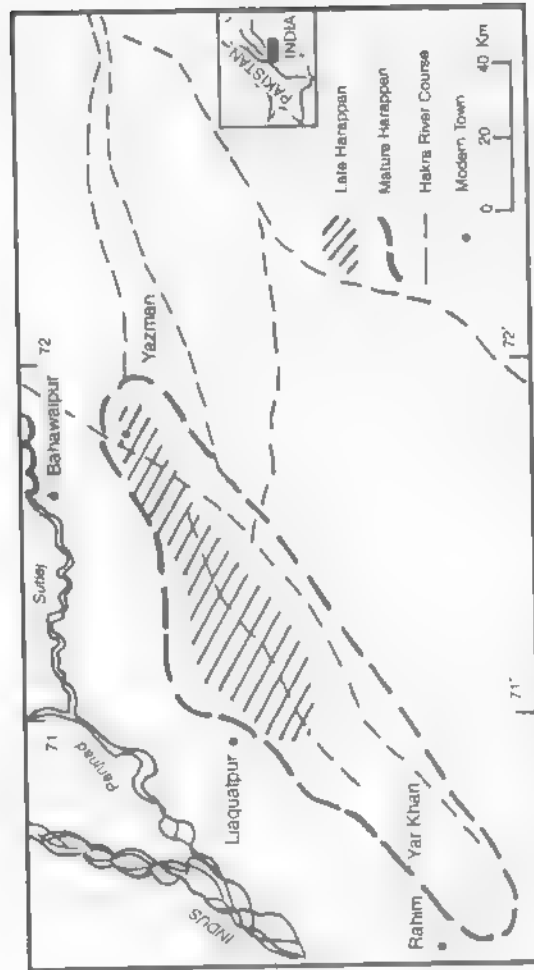


Map 2A: Site distribution area in Cholistan (after Mughal 1992)

Fairservis' Stage III is characterized by a fully developed sedentary village life with regionalization and inter-regional contact. He included in this, not merely the relevant sites in Baluchistan (Damb Sadaat II, Sur Langa III, Rana Ghundai III, Anjira IV, etc.) but also sites like Amri, Kot Diji, Kalibangan and other probable ones in Sind and north Rajasthan. In Fairservis' analysis the agricultural settlements of this period represented an adequate adjustment with their ecological settings, which was manifest in the developed type of settlements and the presence of various ceramic designs like the humped bulls, cobras, birds, fishes, etc., typically Indian designs in themselves. This stage was followed by the Indus civilization which was Fairservis' Stage IV. The distinctive traits of Stage III were supposed to be large villages, a wide variety of copper-bronze pins, knives, axes (including socketed types), female and other types of terracotta figurines, compartmented seals, an elaborate system of potters' marks, alabaster vessels, diverse painted pottery, open-based mud ovens, bread ovens and a 'very apparent regionalization'. Of the various regions manifesting these traits, Fairservis chose the one in northern Sind and Kachhi plain to describe as early Harappan (Fairservis 1967: 11). Since this is the first use of the term early Harappan, as opposed to Ghosh's 'proto-Harappan', his line of argument may be cited in detail;

Most significant is the style found in northern Sind, along the southern borders of the plain of Kachhi in the north of the K. R. range. Apparently a localized outgrowth of the Kulli-Quetta culture styles of Baluchistan, it is characterized by such features as unpainted terracotta bangles round in cross-section, terracotta animal figurines with funnel-grooved heads, so-called cakes of terracotta, and a pottery corpus closely related to that of Baluchistan. However, the painted designs on the pottery, though derived from Baluchistan, are characteristically composed in over-all patterns in which floral elements have a special place. Unfortunately, no excavator has as yet uncovered these designs in the region. The Kulli-Quetta style is a very large one, and the designs are characteristic of the style of the Harappan civilization. It is also known to have existed prior to the mature phase of that civilization at certain sites, including Mohenjodaro. This provides a reason to label it Early Harappan and thus in the direct line to the so-called mature or 'classical' phase of that culture (Fairservis 1967: 11).

Apart from trying to define an early Harappan horizon, largely on the basis of pottery, Fairservis tried to explain the origin of the Indus civilization. His final conclusion in this regard was certainly, contrary to what is generally held, that 'The Harappan civilization can be said to have achieved its characteristic style indigenously; its elaboration may be the result of



Map 2B- Site distribution area in Cholistan (after Mughal 1992)

Mesopotamian contact' (Fairservis 1967: 15). Although Fairservis (1967: 19) realizes that the 'urban situation in the Indus river valley was a logical development from advanced village farming in an optimum situation', he does not deny what he (Fairservis 1971: 222) calls the 'outside influence factor'. An 'important diffusionary movement overland from southern Mesopotamia and Khuzistan . . . played a part in the development of the style of the late, if not the early, phase of the Kulli culture and undeniably the Harappan civilization' (Fairservis 1971: 228). This, according to him, was the first factor. The second factor was the 'subcontinental setting', a setting which possessed considerable 'subsistence advantages'. The third factor was called the 'social readiness for civilization'. It is less easy to define, but the basic idea is that the highland villages in the valleys of Baluchistan had already established a socio-economic, cultural and organizational network of their own. When the transition to the Indus plains took place, this network was 'extended by degrees with consequent shifts of population according to the successful settlement of region after region'. This meant that the links between the different regions were not broken nor did they lose touch with the highland setting as the expansion of settlements in the valley went on. In Fairservis' argument:

... civilization processes necessarily tended to continue. Civilization would appear to have come about as the inevitable result of the direction already taken by the villagers of the borderlands. What was lacking in the highlands was the space and the natural resources to stimulate the process. In the Indus both were at hand. With little technological innovation but with an already largely established hierarchical system the organization necessary to handle the problem of desert life in the valley was created (Fairservis 1971: 238).

Robert R. Allchin (1968: 23-5) in 1968 agreed 'readily with Ghosh in seeing the continuity from pre-Harappan to Harappan times' in the Indus valley as 'suggesting that a large if not a major element in the Harappan civilization must derive from the pre-Harappan culture of the Indus valley itself as constituting the formative stage which led to the formation of the first Indian cities from villages. They also pointed out many cultural resemblances between the pre-Harappan sites of the Indus valley and suggested that there already was a considerable cultural uniformity in the area. According to them there were three sub-regions of the pre-Harappan culture province: the central, including Kot Diji, Harappa and possibly Mohenjo-daro; the southern or Amri with sites such as Balakot and the eastern or Kalibangan, with hypothetical affinities with other sites.

R. Mughal's dissertation is dated 1970-71 and is influenced in two ways by Fairservis (1967). First, Mughal's use of the term early Harappan goes back to Fairservis' use of the term. Secondly—and perhaps more importantly—like Fairservis before him, Mughal postulates a north Baluchistan greater Indus valley axis. Unlike Fairservis, however, his analysis of the data is more detailed and his explanation of the origin of the civilization is not dependent on the 'outside-influence factor'. Terminology—the applicability of terms like pre-Harappan, proto-Harappan, early Harappan and early Indus, all of which are known to mean the same age—is not particularly important. But what is important is that there was a cultural continuum with a good deal of shared traits in both north Baluchistan and the greater Indus valley. Mughal systematically considered the mass of data from all the relevant excavated and unexcavated sites and added considerable precision to them in cultural terms. Perhaps the most important part of Mughal's analysis from the point of view of the origin of the Indus civilization is his comparative analysis of early Harappan material remains and their distributional patterns in the greater Indus valley. The items considered are not merely pottery (which he considers in detail, taking into account both the similarities and dissimilarities and defining the different areas of distribution of Amri, Kot Diji and Sothi or Kalibangan wares) but also every other cultural item—architecture, terracotta, metallurgy, stone tools and technology, graffiti and fauna. In north Baluchistan he first studied the data in terms of internal comparative stratigraphy and then showed how this area was linked externally with south Afghanistan and the associated areas beyond. Comparing the north Baluchistan material with the greater Indus valley early Harappan assemblage, he found close culture inter-relationships between the two regions. The importance of north Baluchistan as a link with the west seemed to have ceased with the beginning of the Indus civilization and this role seemed to have shifted to south Baluchistan. Mughal also pointed out that towards the end of the early Harappan period, there was an increase in population both in north Baluchistan and the greater Indus valley. Mughal's concise summary of the evidence needs a close consideration at this point.

Concerning the evidence of Early Harappan period in the Greater Indus Valley, in the questions pertaining to the rise of urbanization, some points require re-emphasis. Permanent occupation is indicated by the use of stone and mud-bricks in successive levels exposed at Kot Diji, Kalibangan I and Amri IB ID. There is a progressive change from simple domestic structures of one or two rooms to complex buildings of several rooms with elaborations of platforms, drains and soak wells. The stability of settlements through time may also be linked with the

availability of favourable means of subsistence. A monumental aspect of the evidence is demonstrated by the presence of defence walls, indicating also that urban centres—administrative?—had emerged and there was need for defence. There was common knowledge and use of copper, steatite and lapis lazuli, indicating accessibility to the sources of raw materials or availability of resources for procuring them. A common technological level is reflected by the use of stone and bone tools. Specialized crafts, like flint-knapping, had emerged but the possible occupational and/or class stratification. The use of wheeled carts is common as shown by the presence of numerous toy-cart frames and wheels. The carts were probably drawn by bullocks because *Bos indicus* is mentioned in the faunal remains of the Early Harappan period and by the discovery of carts, bullock harness modelled in clay. The ceramic groups in different parts of the greater Indus plains, despite some regional differences are marked by many similarities in their forms and decorative designs. Thus, the appearance of permanent settlements, some degree of monumentality in architecture, craft specialization, the use of draft animals and distribution of identical forms of pottery over an extensive area in the Greater Indus Valley and also in northern Baluchistan is the phenomenon precisely like that in Mesopotamia during the Ubaidian (c. 5300-4300) and Uruk (c. 4000-3500) periods of the late fifth to early fourth millennium B.C. By doing so, he calls the period of the pre-urbanization. The similarities of many cultural traits reflected in both the ceramic and non-ceramic materials of the early Harappan cultures represent like the Ubaidian phase in Mesopotamia, the first phase of the Greater Indus Valley, which subsequently crystallized into a cover-all homogeneity and standardization of architecture, crafts and technology. Most of the elements that later characterize the civilization of the Harappan period are the products of the urbanization and some of these processes. Mughal 1971: 373-4.

Mughal is on less firm ground when he tries to explain the origin of the civilization. He confesses, 'It does not seem possible to recon-struct the circumstances leading to urbanization in the Indus Valley as far as Robert McC. Adams has done in the case of Mesopotamia' (Mughal 1971: 376). As far as I can deduce, he puts emphasis in this regard on two factors. First, he tries to argue that during the mature Harappan period, the centre of power shifted from north to south Baluchistan and settlements spread to the coast suggesting urbanization, if not with Mesopotamia. Secondly—and this seems to be more important in his scheme of analysis—he tries to infer a population increase during the early Harappan period. However, even in this case he is far from being

It is possible that population increase or its concentration, was the primary factor in precipitating the Urban Revolution in the Indus Valley. On the present evidence, it is difficult to pinpoint the exact time when

the change from the 'incipient' to the full urbanization took place (Mughal 1971: 377).

Mughal's summary of the evidence, which is cited and which highlights the basic significance of the early Harappan level in the make-up of the Harappan civilization, finds an echo in my independent assessment of the evidence in 1972-73:

In an impressionistic view, the pre-Harappan villages may be said to have introduced in the Harappan distribution belt the following technological and economic features: an extensive use of wheels, a limited but developed knowledge of copper-¹bronze, a plough based cultivation along with a knowledge of local cultivable crops, the use of durable building materials, the laying out of a nucleated settlement within walls, the turning out of a wide variety of terracotta and stone objects, a good deal of regional inter-connection, and undetermined quantum of external trade contacts, etc. (Chakrabarti 1972-73).

The problem of origin still remained. In 1973 Mughal wrote:

On present evidence, the mature Harappan culture at early Indus or Harappan sites arrives with a fully developed mature culture. Does this sudden change mark a major shift in the socio-political structure of the Indus people? If so, what were the circumstances in which such a change occurred? At present, we have no evidence to answer these pertinent questions (Mughal 1973: 15).

The possibility that the process of change from the pre-Harappan rural base to the Harappan civilization was 'basically in the social institutional sphere, giving the earlier village horizon a new, qualitatively different dimension' has also been suggested by me (Chakrabarti 1972-73: 30).

In 1972 C.C. Lamberg-Karlovsky (1972) brought in the issue of trade as a possible causative factor of Indus urban growth. The important point in Lamberg-Karlovsky's argument is the emphasis he puts on the significance of sites like Tepe Yahya and Shahr-i-Sokhta in southeast Persia which had control over certain natural resources and were either manufacturing or distributing centres of finished products based on these resources (steatite at Tepe Yahya; lapis lazuli and alabaster at Shahr-i-Sokhta). The demand and supply relationship which this region had with Mesopotamia must have provided the basic economic base of urban growth at these sites and 'as in a system feedback', contributed to the urban growth process in Mesopotamia also. Because of an established pre-Harappan trade network with the region, the Indus system also could have been influenced by this process like Mesopotamia was. This hypothesis thus focusses attention in the Indian context on the nature of the relationship between the Harappan level and what Lamberg-Karlovsky



Map 2C: The suggested Indus-Hakra flows during the period of the Indus civilization (after Flam 1981)

and M. Tosi (1973: 21-53) call an 'early urban interaction sphere' established around 3000 BC in Turkmenia, Seistan and south Afghanistan.

This is a clear attempt to link the Indus urban growth/development in Iran, central Asia and Afghanistan. The emphasis is not so much on the Indian soil as on postulated developments outside. Echoes of this attempt persist in various forms in Western archaeological writings on India. For example, Rita Wright (1989) postulates 'interaction stretching from Quetta to the Gulf on the basis of her neutron activation studies of painted grey ware. Whether such a large interaction zone can be postulated on the basis of the number of sherds available to her for analysis is a different matter. E.C.L. During-Caspers (1991, 1992) tries to link the origin of the Indus script to a postulated migration of Mongoloid people from central Asia. Sheila Weiner (1984) tries to assess Indus art mainly with reference to its supposed similarities with miscellaneous specimens in Iran.

Trade assumes an overtly neo-colonial form in Shireen Ratnagar's attempt to explain the origin of the Indus civilization (1981). One of her fundamental premises is that the 'Harappans appear to have functioned mainly as suppliers of goods to the western markets' (Ratnagar 1981: 228). Interestingly enough, India's position in relation to the British empire lay in its role as a supplier of raw materials or goods to the British manufacturing industry. The fact that the Indus civilization should be given exactly this role in relation to Mesopotamia in the writing of a certainly intelligent and well-read Indian scholar speaks volumes for the sophistication with which such neo-colonial theories are put forward in archaeological literature and the gullibility with which they are accepted as pure scholarship by Third World scholars.

Ratnagar further argues

The transition to urban society may have come about in the Harappan region as overly subordinate lineages of the plains and the peripheral areas were torn only by competition or expansion, seized the opportunity to engage in external relations with their contemporary chiefdoms and the peripheral area expected to encompass the larger part of the Indus plains and each of the archaeologically defined spheres of Seistan, Khotan and Iran in which is represented one critical alliance of chiefdoms with ranked chiefdoms. Asistip... If that is the case, there would have been internal checks on the early chiefdoms' accumulation of wealth. We have also observed that the Indus civilization was not a primitive state... If there were competition between chiefdoms for access to this area, it would have been a source of success in trade, fishing and agriculture. It is possible that the Indus civilization was a response to the pressure of the plains.

... have an advantage over others. Lapis lazuli and its gifting and counter-gifting could have acquired a circle of personal dependents (Ratnagar 1981: 245).

Citing the opinion of two Western anthropologists, she argues that under such conditions heads of subordinate lineages would be drawn towards the chiefly centres, that local groups of the hinterland would begin to lose their autonomy, and that subsequently dependent clan members would also move towards the centre' (Ratnagar 1981: 245). It is a pity that such a cleverly constructed 'anthropological' argument should collapse with the discovery of lapis lazuli in the Chagai hills and the Zhob Valley.

In 1982 B. and F.R. Allchin (1982) used the terms 'Early and Mature Indus stages' and called the early stage 'the formative period, the stage of incipient urbanism'.

The essential basis for the mature urbanism must be seen as the gradual build-up of population and its spread through the Indus plains... the growth of technology and agriculture, know-how, and the establishment of a socio-economic interaction sphere over an enormous area. These things are all to be dated to the early period of the Indus stage (B. and F.R. Allchin 1982: 165).

This formulation does not differ in any way from the formulations made by Chakrabarti (1972: 13) and Marshall (1973), among others, but one of the assertions is difficult to explain.

B. and F.R. Allchin (1982: 163) state that the 'Early Indus period corresponds with the... of Mesopotamia and the most affluent period of... of the Sumerian...'. It is difficult to see how this can be a period of the Indus stage (B. and F.R. Allchin 1982: 163).

I shall not go into detail with this premise because there seems to be no need to do so. With Mesopotamia during the early Harappan/early Indus period, Mesopotamia was the early Harappan/early Indus stage... What is interesting is that it is so difficult for them to think of the origin of the Indus... about trying to link the issue in some way with Mesopotamia... B.P. Agrawal in the same year (Agrawal 1982: 141) did not pay attention to the problem of the origin of the Harappan civilization... that the Harappan culture was not a transplant from...

He is therefore aware that the 'Sumerian civilization' was a... that the Indus and the Sumerian civilizations...

What?

innovations was already in the air to have influenced the pre-Harappans and Harappans too'. It is difficult to understand the basis of his chronology of the early dynastic Mesopotamia or what he calls the Sumerian civilization vis-a-vis the Harappan civilization. As far as the second part of his opinion is concerned, Agrawal merely echoes Wheeler's opinion on this issue.

Mesopotamia and Elam figure prominently in Louis Flam's explanation of the origin of the Harappan civilization (Flam 1984, 1986):

My recent research in Sind has now established clear artifactual correspondence between Kot Dijian ceramics at Nippur in Mesopotamia during the Jemdet Nasr Period (c. 3300–2900 BC) and between the Jemdet Nasr ceramics and the Amrian phase at the site of Ghazi Shah in Sind Kohistan. Lamberg-Karlovsky has also found Amri and Nal ceramics in Eastern Iran and has suggested this area as a possible contact zone between the Indus Region and Mesopotamia during the Jemdet Nasr Period. Thus, the correlations linking Amri-Nal-Kot Dijian with Mesopotamia are further magnified by these correspondences between Amri-Nal and Eastern Iran, at a date approximately 600 years earlier than the Harappan civilization. In addition, a clear link can now be established between the site of Kulli in Southern Baluchistan, and the region of eastern Iran, Bahrain and Mesopotamia, dating to the Early Dynastic II period in the Mesopotamian chronology (c. 2700–2400 BC). In a recent paper Tosi has presented an argument in which he has named Eastern Iran 'Outer Elam'. On the basis of the limited but provocative evidence, suggested in this paper this region of 'Outer Elam' may have to be extended at least through Southern Baluchistan and Sind Kohistan at the end of 4th and the beginning of the third millennium BC. The preceding evidence emphasizes the importance of Western Sind and the complex relationships or interactions which developed there which eventually led to the development of the Indus civilization (Flam 1984: 82).

It has been necessary to cite Flam's and others' Mesopotamia/West Asia-centred theories in detail because these unerringly demonstrate how the idea of the origin of the Indus civilization has hardly changed since Wheeler's day. Mughal's and some others' efforts notwithstanding Flam has simply been more forthright than the rest; he did not even bother to give the details of his Kot Dijian ceramics at Nippur and the evidence of a 'clear link' of Kulli with Mesopotamia.

The eighties began with one of the most momentous discoveries in sub-continental archaeology (Jarrige and Meadow 1980). The excavations in the Bolan valley at Mehrgarh in the Kachhi plain are significant not so much for the light they shed on the history of the growth of villages which led to the development of the civilization in the Indus valley and elsewhere as for the fact that they show the importance of this part of South Asia with regard to the cultivation of wheat and barley and the rearing of

sheep, goat and cattle. Secondly, by providing a continuous sequence of cultural growth in this area from c. 7000 BC they have brought into sharper focus the picture of cultural development elsewhere in Baluchistan in so far as these developments relate to this sequence. However, the question remains as to what extent can the discoveries at Mehrgarh be treated as part of the growth of village settlements in the Indus plain?

The Kachhi plain—about 5310 square miles of alluvium between the Mar Bugti hills in the east and the Kirthars and central Brahui Range on the other side—is no doubt a projection of the Indus alluvium into what is now administratively Baluchistan, but its geographical conditions, it seems, are different. The area enjoys about three inches of annual rainfall (most of it in July–August) and is subject to scorching heat in summer, the highest temperature in the subcontinent being recorded in Jacobabad. The major rivers of the Kachhi plain—Nari, Bola, Sukleji and Mula and the tributaries such as the Dhorri, Lahn and Chhatri—dissipate into countless natural channels on entering Kachhi. These are seasonal courses but during the floods water is raised to the surface by a system of large dams across the beds of these rivers. On the whole, the picture is very different from that obtained in the Indus flood plain and from this point of view alone it is difficult to argue that Mehrgarh in the Kachhi plain stands as a milestone in the linear course of development towards the Indus civilization except in a general sense. The immediate context of the Indus civilization is provided by the pre-urban settlements in the plains of the Indus in Sind, the Indus and her tributaries in Punjab and the Ghaggar-Hakra in the Rajasthan/Cholistan desert. One of the major issues in this context is to try to delineate the core area of this development.

The process began, on Mughal's reckoning (Mughal 1990), in the first half of the fourth millennium BC. By this time the village-farming communities of the Baluchistan hill valleys, Bannu basin, Gomal valley and Las Bela coast had established deep roots, displaying nucleated settlements with mud-brick houses, copper-bronze metallurgy, a wide range of plain and painted wheel-made pottery, terracotta mother-god vessels and cattle figurines, regionally available raw materials and some evidence of participation in the trans-regional trade to the west. At this point in time the challenge lay in harnessing the tremendous agricultural potential of the two major river valleys to the east—the valleys of the Indus and the Ghaggar-Hakra.

The most significant cluster of pre-early Harappan sites in this valley can be seen in the distribution of Mughal's Hakra ware sites in the Cholistan desert in the Ghaggar-Hakra valley in the present Sindh.

system. The diagnostic traits seem to be a pottery with a mud roughened surface and a red ware with a black slip all over the body. On the Indus and sate of the Rajasthan/Bahawalpur border only one site has been reported (Dalal, 1981); its basic distribution is in the Pakistani segment. The distribution apparently extends to the central Indus valley because the Hakra ware has been reported in the first period at Jallipur near Multan (Mughal, 1971). In fact Jallipur is the only site where this pottery has been stratigraphically isolated; its wider ramifications, if any, are not yet understood. Maghal reports 99 Hakra ware sites in Cholistan, mostly on mudflats and some on the fossilized sand dunes in the area. These include 52 temporary occupations or camp sites, 45 settlement sites and 2 sites where industrial or craft-related activities are indicated by the presence of kilns. The criteria for these distinctions, specially between the camp sites and settlement sites, are not made clear. What is interesting is that only two of these sites were occupied in the succeeding early Harappan period and only four in the mature Harappan stage. It is difficult to explain why there was such a distinct settlement shift after this period. Mughal (1992) links this to a change in the course of the Hakra, but the point does not come out clearly in his brief discussion of the problem. Apart from pottery the surface finds at the Hakra ware sites comprise terracotta animal figurines with short and joined legs which include representations of cattle, sheep and terracotta bangles with triangular rectangular cross-sections. Fragments of grinding stones, bits of copper and all the industry including microblades, borers, leaf-shaped arrow heads, scrapers and cores. The Jallipur assemblage shows, in addition, gold, coral and semi-precious stone beads. This discovery of varieties of stone, copper, shell, gold and coral objects clearly underlines a pattern of internal trade network. What is of further interest is that Mughal (1992) posits a four-tiered settlement hierarchy for the sites of this period: 0.1–5 ha—21, 5.1–10 ha—5, 10.1–20 ha—7, 20.1–30 ha—4. This is an impressive site hierarchy in the context of this period, and on the basis of the available data it is not difficult to postulate the existence of a social and administrative hierarchy, craft specialization and an exchange network. It may also be stressed that the inception of this culture which apparently emerges full-fledged in the region is obscure and one would reckon the excavation of Hakra ware sites in Cholistan an archaeological priority.

The second phase of the Cholistan sequence is represented by a Kot Diji-related horizon or what Maghal calls the early Harappan period. He lists 40 or more early Harappan sites in this area with a slightly different but overlapping distribution with the earlier Hakra ware sites. He

offers a size category analysis for 37 of them: 0.1–5 ha—19, 5.1–10 ha—8, 10.1–20 ha—3, 20.1–30 ha—2. He further says that only 3 of the early Harappan sites could be called 'camp sites' and that the number of sites with kilns increased from two in the earlier period to fourteen. The four-tiered settlement hierarchy apparently continued but 13 of the sites—Gamanwala (27.3 ha) and Jawah (22.5 ha)—were comparable in size with Rehman Dheri in the Gomul valley in the west and Kalibangan in the east. The distribution of these sites tapers out to the east of Gamanwala, i.e. in the direction of Kalibangan.

There is a difference in the site distribution during the mature Harappan period in the area. First, the core distribution area lies farther downstream. In fact, to the east of 72 E there are very few mature Harappan sites, Sandhanwala being one of them. The implication is that the sites in Rajasthan fall outside the scope of the Cholistan distribution area. Secondly, the number of sites—174—greatly increases in this period. Mughal offers a size category analysis for 73 of them: 0.1–5 ha—34, 5.1–10 ha—20, 10.1–20 ha—8, over 80 ha—1. He further observes that at 79 sites there were areas 'exclusively ear-marked for kilns and mass production of items'. As there is hardly a site in this area where the mature Harappan phase directly overlies the early Harappan one, Mughal (1992) infers that another hydrographic change after the early Harappan period necessitated 'relocation of settlements on new ground'.

If Maghal's work has been our base line in Cholistan, Louis Ham's work should be our base line in Sind. Here the demarcation between the Kohistan-Kothar piedmont and the main Indus valley is clear, and according to Ham's map (Ham, 1981), only one site—Kot Diji—is way out of the valley, although not on the valley floor itself but on a high outlier overlooking it. The rest of the Amri-Kot Diji sites marking the first phase of valley growth in this part is confined to Kohistan and the Kothar piedmont. As Ham's maps (1981) clearly suggest, there is an overlap between the distribution of Amri and Kot Diji sites, and from this point of view grouping together of these two categories of sites is a logical conclusion. But in the same area he also shows some 'transitional phase' settlements, he relates to early Kalibangan of southern Punjabistan. The main interest in Ham's work lies in the fact that he refers to a division between rural villages and a river town in the pre-Harappan settlements of this region. I do not want to cite Ham in detail on this crucial point.

The second phase of the pre-Harappan settlement period in Sind, Kacch, consists in the appearance of a conically-shaped hill which rises an average height of 10–15 m above the surrounding plain. These conically-shaped hills... vary

in circumference, but each one exhibits the remains of a series (2-4) of encircling, terraced stone walls on its slopes, and remnants of inclined stairways or ramps ascend its southern side. Below these conically-shaped hills lie the remains of numerous stone foundation walls indicative of domestic structures. I refer to this settlement type as *acro-sanctum/lower-town* to emphasize its highly elevated (*acro*) conically shaped configuration and to infer that the high hill vis-à-vis the lower habitation area was certainly a private place, if not sacred (*sanctum*). Excavation on top of the *acro-sanctum* is necessary to ascertain their exact nature, but the spatial exclusiveness from the lower town is clear from unexcavated surface remains.

Of the 13 prehistoric sites located in the Kirthar region, one site displays the *acro-sanctum/lower-town* settlement pattern. The pattern appears in 13 of the 46 known sites in the Sind Kohistan region. The earliest of these *acro-sanctum/lower-town* settlements can be dated by ceramic parallels to the Amri phase in Sind Kohistan. Other sites with the settlement pattern can be assigned to a linked Amri-Transitional phase, such others to the Transitional phase. Although Kot Dijian ceramics do not predominate on the surface of the *acro-sanctum/lower-town* sites, some typical examples are commonly found on the sites of Amri or Amri Transitional date (Flam 1986: 74-5).

Another important part of Flam's analysis is that he points out the mutually exclusive character of the Amri and Kot Dijian related sites. In contrast to the dense distribution of 'early Harappan' Kot Dijian sites in Cholistan, the Kirthar and Kohistan regions have the densest distribution of Amrian sites. 'Thus, two major cultural spheres, or ecosystems, can be delineated with linked interaction between the two indicated by the Kot Dijian sites in the Kirthar and Kohistan regions' (Flam 1986: 80).

Regarding the distribution of Kot Dijian sites in the lower Indus region Flam's testimony is important. He demonstrated that barring the three Kot Dijian sites, two of which are located in Sind Kohistan and another in the Kirthar piedmont, and the site of Kot Dijian itself which, although technically in the lower Indus valley, is on the top of an outlier, there is no Kot Dijian site in the valley itself. Flam discusses the reasons of Kot Dijian-Amri interaction as evinced by the presence of Kot Dijian sites in Kirthar-Kohistan but he also points out the ecological difference between the floodplain and Kirthar-Kohistan.

Without a large scale canal irrigation system, *said* (*ind*) (*undation*) irrigation could only provide a single *rabi* crop. In Sind Kohistan and the Kirthar region, perennial spring water for agricultural purposes permit double cropping of *rabi* as well as a *kharif* crop. In the latter regions, however, soils are generally poor, shallow and not widely available, with large grazing areas and plentiful

year round water supplies pastoralism flourishes. In the Lower Indus Basin rich soils are plentiful, and the problem lies in the seasonality of the floods (Flam 1986: 81).

Among the excavated sites of this region, both Amri and Kot Dijian, beginning around the middle of the fourth millennium BC, show a fair amount of semi-precious stone beads including those of lapis lazuli, and shell and copper objects, demonstrating the regional exchange network. The evidence from Kot Dijian is more elaborate. Of the twenty-one occupational layers at Kot Dijian the top four layers (up to 3A) are Harappan, the next layer is a burnt one and the lower sixteen belong to the 'Kot Dijian' culture. The settlement at this level seems to have been divided into two parts, one of which was encompassed by a wall, and has been called the 'citadel area'. This surrounding wall was massive and solid, of mud resting on an undressed stone block substructure, and supported at places on the outer side by a mud brick revetment. The wall was also strengthened externally with bastions. The bastion at the north eastern corner measured 32 ft by 20 ft (9.75 m by 6.09 m). The stone and mud houses inside were very close to the surrounding wall, occasionally even using it as one of their own walls. The floors of the houses were paved with mudbricks and perhaps they were flat-roofed. The evidence of house remains outside the 'citadel area' is disturbed. The broad features of the Kot Dijian pottery remain the same throughout but in its style of decoration and partly in texture and form there seem to be two main stages of development. In the earlier stage the texture is thinner and the shape is mostly a squat, globular, neckless and neckless form. The decoration is almost exclusively confined to a characteristic neckband. In the later stage the shapes and designs both become more diverse. The designs include such motifs as stylized pipil leaves, etc. and the shapes comprise dish-on-stands, basins, gourd urvases, etc. One of the paintings represents what has been identified as a horse deity. The tool types in stone consist of blades, scrapers, micro blades, leaf-shaped arrowheads, etc. Copper does not seem to have been reported from Kot Dijian but the use of copper must have been known at this time. Terracotta objects include toys, plain and painted bangles, beads, cores and heads. There is also a finely modelled terracotta bull with a well developed body, stout muzzle and short pointed horns. Other material remains are limited to a few objects of shell and bones (for Amri, see pp. 41-8-2), 1964b: 57-65, for Flam's work at Ghazi Shah. Material from Kot Dijian, Khan 1964, 1965. Broadly, the 'Kot Dijian' culture at Kot Dijian falls in the first half of the third millennium BC. Mughal

(1990) points out that the published information from the site of Kot Diji is very selective, and on the basis of his own study of the stratified material he writes:

The occurrence of different categories of materials in both Kot Diji and Harappan levels clearly demonstrates continuity throughout. The only significant difference is the absence in the Kot Diji levels of mother goddesses of the type and form so familiar to us from the mature Harappan sites. . . . Another conclusion is the presence of terracotta 'cakes', cones, cart frames and ear wheels in the Early Harappan level at Kot Diji, confirming the existence of the pottery types. These objects, pottery such as offering stands and painted designs of fish scales and intersecting circles were usually associated with the Mature Harappan culture only. (Majumdar 1990: 186)

The third area where the Kot Diji related horizon is prominent and early is the Gomati valley. The early Harappan level at the site of Gumla (Datta 1970: 71) in this region rests on two earlier levels, of which the first one is aceramic and the second one has wheel-made painted pottery, copper-bronze tools and beads, terracotta human and animal figurines, bird whistles, cart frames and bangles, stone pestles, grinders and pounders, and microblades and other types of microliths. The Kot Diji pottery appears in Period III which has also semi-precious stone beads, terracotta beads, bangles and hooded female figurines with the lower parts of their bodies shown flat and bent at right angles, and 'true Harappan style parallel-sided blades'. This period at the site is dated soon after 3000 BC. Period IV is mature Harappan.

The evidence from Rehman Dheri (Durrani 1988) in the same region is more detailed. It is a large site (1700 ft by 1500 ft by 15 ft or 518.16 m by 457.2 m by 4.572 m) and, like Gumla, is located on an old terrace of the Indus. The area has about 10 inches of annual rainfall; the vegetation is sparse and dry, and cultivation depends on what is locally called the 'barani dagar' method of irrigation. This is a method by which, during the period of heavy rains, fields covering a wide area are embanked on the lower sides with the upper sides kept open. Water can thus flow in and when the surface is dry, the land can be ploughed, sown with crops and levelled with the help of a wooden plank. This levelling leads to the sealing of the capillary line of the soil and thus preserves soil moisture and checks evaporation.

Since its earliest occupation (Period IA) the large site of Rehman Dheri was surrounded by a 4 ft (1.2192 m) wide wall resting on a 6 ft (1.8288 m) wide foundation or support wall, both made of packed and brick-shaped clay slabs and dressed clay blocks. The rooms situated

centrally kept mud-built and mud-plastered grain silos of varying diameter (2 ft 5 inches to 4 ft 5/8 inches or 73.66 cm to 1.3462/1.3716 m). There are also circular ovens and/or rectangular hearths or fireplaces. Pottery was almost exclusively wheel made, of thin fabric and with floral and geometric motifs including pipal leaves painted on a predominantly red-buff surface. The silos have yielded mostly wheat and some barley as well. The bones of buffalo, cattle, sheep, goat and fish have been identified. Period IB is dated around 3000 BC and among the new features one may mention the Kot Diji type of rimless and neckless ovoid jars and an ivory seal, 3 by 2 7/8 by 6/2 cm depicting two mountain goats with wavy horns and a few symbols on one side and two scorpions, one frog and one symbol on the other. Period II shows more frequent 'typical Kot Diji type jars and Kot Diji-Sothi-type specimens', apart from an increasing number of incised painted graffiti on pottery. Peacock and pipal leaf motifs increase and fish scale motifs in black-red make their appearance. In the next two periods (III A and III B) 'the ceramics are reminiscent of evolved Kot Diji types, with some comparable to typically Harappan examples'.

This large site has been subjected to only limited excavations (Durrani 1988: 133). One cannot yet say if the settlement was laid out on a grid plan or not. What is worth considering is that the settlement was from its very beginning a rectangular area enclosed by a wide mud wall and that the periods have been demarcated mainly on the basis of changes in the frequency of certain pottery types.

In the Gomati basin, apart from Sheri Khan Tarakai (Khan, Knox and Thomas 1971) which goes back to a neolithic level of the mid-fifth millennium or earlier, the reported village sites all belong to the Kot Diji-related period. Site sizes vary from 0.6 to 10 ha. The excavated sites of Sarakholi (Khan, Knox and Thomas 1971) and Tarakai Qila (Allchin and Allchin 1986) have yielded, in addition to mud-brick structures, wheat, barley, lentil and lentil, a large number of stone objects such as ring stones, pestles, pounders, grinders, axes etc. and microlith industry including microdrills for bead-making. Lapis and turquoise have also been reported. The dates fall in the last part of the second half of the third millennium BC and later.

Kot Diji related occupations in the Taxila valley date around the third millennium BC and later. There is an immediately preceding 'Pre-Harappan' level at Sarakholi I in the area but Majumdar (1990: 183) states that in this area there was only rain-dependent agriculture, and it is possible that proto-historic occupations could not strike deep

roots. He points out the cases of Hathial and Jhang where the Kot Diji occupation is found between sterile layers, and the sites were reoccupied after long abandonment.

★ There is some geographical problem in understanding the distribution of sites with the early Harappan level in Panjab, Rajasthan and Haryana. First, as we have seen, according to Mughal's assessment of the situation, the Kot Diji-related horizon in the Taxila valley/Potwar plateau could not strike deep roots because of the limitations of local agriculture. Secondly, east of the Potwar plateau, i.e. in the doabs of western Panjab (in Pakistan), only one site, Khadinwala, has been reported (cited by Mughal 1990), but the site seems to be on the western bank of the Ravi. The point is that the Panjab doab region in Pakistan, especially the region to the west of the Ravi, is said to be harsh and arid. Despite Mughal's protestation that the presence of Khadin-wala is a 'clear indication of the presence of many more sites in the Punjab waiting to be documented', I consider this a little unlikely. The early Harappan sites are concentrated in the region to the east of the Ravi and in the Indo-Gangetic divide between the Sutlej and the Yamuna. The Ghaggar and Chautang valleys or the ancient Sarasvati-Drishadvati valleys are a part of the Indo-Gangetic divide and form the major foci of early Harappan site distribution in the region. But, how does one geographically understand the location of Harappa on the Ravi? Was it a part of the distribution straight from the Jalilpur/Multan area of the central Indus valley along the Ravi? Or was it a part of the spread along the upper course of the Ghaggar and the course of the Chautang till it meets the Ghaggar? I do not think there are clear answers to these geographical queries at present.

Recent excavations at Harappa on the eastern bank of an old course of the Ravi have thrown a lot of light on the early Harappan occupation in the area, although as early as in 1946 Wheeler found its ceramic evidence below the mature Harappan defence wall around the western mound of AB at the site (Wheeler 1947). The early Harappan period is now taken to stand for two periods: Period I marked by initial settlement on the natural plain surface with ceramics and other materials related to the Kot Dijian tradition. According to G.F. Dales (1992), Period II 'characterized by the construction of massive mudbrick revetments or retaining walls at the periphery of the mound as revealed so far at the northwestern corner of Mound E. The ceramics are basically those of Period I but with the addition of new forms that represent a transition to Period III'. J.M. Kenoyer (1991) sums up the data available up to the 1990-91 field-season. To begin with, he infers that the original surface

on which the early Harappan settlers first settled was 'undoubtedly a terraced river plain with ox-bow lakes and scattered dry river channels'. The northwestern edge of Mound E has shown, all over it, Period I hearths, these include Kot Diji-related pottery, grey fired clay bangles, blades of greyish-black chert, a stone celt, beads of lapis lazuli, steatite and carnelian, and terracotta human figurines. The initial settlement was concentrated to the northwestern corner of Mound E with possible hamlets scattered over the plain. In Period II which is a continuation of Period I, massive perimeter walls made of large mudbricks and with 5-6 different bonding phases were constructed in a single episode at the northwestern corner of Mound E. It appears that these walls, the exterior faces of which are eroded and the interior ones are pristine, functioned as retaining or revetment walls. Kenoyer (1991) observes: 'Overall, these walls represent a relatively massive scale of architecture that would have involved the large scale mobilization of labour both in wall construction and the manufacture of bricks from numerous clay sources'.

A systematic lay-out of habitation areas with house walls oriented in the cardinal directions and located along a major north-south street (cutting by north-south oriented cart tracks cutting into the natural soil) is found along the southern edge of the mound. Kenoyer (1991) further points out that the categories of artifacts which continue to be used in the succeeding mature Harappan period or Period III of the site include specific ceramic types, animal figurines, triangular terracotta cakes, terracotta toys and terracotta bangles. Tan-brown chert from the Rorhi hills and shell bangles made of the marine shell *Turbinella pyrum* appear at the late levels of Period II, and this could mean 'an extension of trade to the south as far as Rorhi and possibly even the coast'. Except for a few examples from Period I where the date falls in the calibrated range between 3300 + and about 3200 BC, even the calibrated dates of Period II hover between 2500 and 2300 BC.

In the Indo-Gangetic divide, i.e. the area between the Sutlej and the Yamuna on the one hand and between the Simla foothills and the Ghaggar on the other, the major distributional study of pre-/proto-Harappan and late Harappan sites is by J.P. Joshi, Madhu Bala and J. P. Joshi (1984). I will take up the issue of the distribution of pre-Harappan sites in this region later, but I would like to reiterate my view that the Harappan sites in Cholistan. In the comprehensive map of the region published by J.P. Joshi and his associates there are only three

early Harappan sites between 73 E and 74-30 E in Rajasthan. The early Harappan sites form a dense cluster only in Sangrur Bhatinda in India, Punjab and Jind Hissar Karnal Gurgaon in Haryana. The major excavated data come from Kalibangan in Rajasthan, Banawali and Kunal in Haryana and Mahorana in Punjab. The other excavated sites such as Siswal, Mitathal, Balu, etc. provide only the ceramic details and underline the stratigraphic position of this level in the regional archaeological sequence.

The early Harappan settlement at Kalibangan located on the southern bank of a bend of the dried-up course of the Ghaggar was within a parallelogrammatic fortified enclosure (western arm/240 m; eastern arm/250 m; southern arm/170 m; northern arm/not a straight line, with the main entrance to the enclosure being located in its northwestern section in two structural phases. The average width of the mudbrick fortification/enclosing wall was 1.90 m in the first phase whereas in the second phase it was increased to 3.4 m. A 1.5 m wide lane was identified in the southeastern section of the early Harappan settlement. Five structural sub-periods marked the house-remains which showed mud mixed with chaff as plastering material and rooms centred around courtyards. The use of burnt bricks has been attested to by their use in a drain. Both underground and overground ovens or *tandoors* of a type which is still used in the local countryside have been found in the courtyards along with stone saddle querns for grinding food grains and limeplastered cylindrical pits or silos for storing them. One of the most interesting discoveries in this level is that of an agricultural field with some mutually intersecting east and north-south furrow-marks still intact. The east-west furrows were interspaced at a distance of 30 cm whereas the north-south ones were interspaced at a distance of 1.90 m. B. B. Lal (1979) has pointed out that horse-gram was sown in the short distanced furrows, with mustard sown in the long distanced ones. Backed and serrated small blades of chalcedony and agate have been found along with copper axes and a type of implement, *parasi*, still used in Rajasthan for cutting scrubby bushes after being hafted at the end of a wooden rod. Copper, shell and terracotta bangles have been found. Beads were made of shell, copper, agate, carnelian, etc. The division of the Kalibangan pottery of this period into six fabrics has been criticised by Mughal (1990: 184) because a particular vessel form may occur in more than one fabric. However, on the basis of his study of the Kalibangan pre-early Harappan pottery Mughal writes:

Fabric C contains diagnostic short-necked Kot Dijian globular vessels with a wide painted band on the neck. A similar type is also included in Fabric A. Fabric

It includes Kot Dijian grooved ware and 'E' cups and dishes on stands. Fabric B includes specimens of Kot Dijian forms but the external surface is plain and undecorated, 'ruscated' and is also treated with multiple wavy lines in relief, which are known as 'Patan Wari' in Baluchistan. In the assemblage are certain other vessels which are also parallels with those from the Early Harappan sites in the Ghaggar-Hakra Harappa and the Gomti valley (Mughal, 1990: 184-5).

According to R. S. Bisht, who excavated Banawali on a dried-up course of the Ghaggar, Saraskati in the Hissar district of Haryana, the excavated material from the pre-early Harappan level (3 m thick) of the site 'bears an overall likeness to that from Kalibangan I' (Bisht 1982: 115). Although no direct evidence is forthcoming, he infers that this settlement had a surrounding wall, now possibly encased within the surrounding wall of the succeeding mature Harappan phase settlement. A 2 m wide brick-edge pathway belonging to the early Harappan level runs along the inner side of the defensive wall of the Indus citadel, delimiting the pre-Indus settlement on the north. Thus, the Indus wall may be found 'to enclose within it the enclosure wall of the antecedent period, as is the case in places at Kalibangan'. Further, although there is no direct evidence of early Harappan town planning, 'some system seems to have been followed since the structures are oriented to cardinal directions'. Both mud and burnt bricks were used, conforming generally to a standard ratio of length/breadth and width. Most of the houses possessed single brick rooms and were thus possibly single storied, low and squat with light thick walls. Some houses possessed thick multi-brick walls. A particular uncovered house complex showed burnt earthen floors and several hearths, ovens and fire pits, suggesting a metalsmith's workshop. The fire pits were large and small thickly plastered circular pits in courtyards which may have been used as storage pits. The pottery comprises all Kalibangan early Harappan types. Copper is said to be scarce at the site. Bone points and tools are, supposedly, numerous. A solitary microblade of chalcedony type is the only industry. Beads were made of gold, semi-precious stones, shell, turquoise, shell, bone and clay. There were bangles of terracotta, shell, turquoise and copper. Terracotta animal figurines, stone beads, etc. were among the miscellaneous finds. Perhaps the most interesting small find is a sherd depicting a canopied cart with four wheels. Grain marks on pottery have been mentioned and there is a small fragment of a seal, weighing 87.855 gm and supposedly containing a sum of a hundred times the supposed Indus unit of 100 gm. Bisht also hints at the presence of a transitional phase between the pre-early and mature Harappan levels, pointing out the existence

of 'a thin deposit of only about 50 cm'. Apparently this has been isolated in 'small segments of two quadrants'. He adds: 'the buff and light red fabrics of the pre-Indus ceramic tend to be more matted and pinkish red or buff in colour and heavier, and thicker in texture in these areas' (Bala 1992: 116).

The early Harappan level at Kalan (IAR 1985: 86, 23-5) on the bank of a dried-up course of the Ghaggar/Saraswati in the Hissar district of Haryana shows, in addition to 'all the six known pre-Harappan fabrics', 'Kalangan', a black and red ware and a bichrome buff ware on which geometric designs were painted in tan or chocolate colour on a buff surface. The black and red ware was not painted. The mudbrick conforms to a standard ratio of length, breadth and width (1:2:3) and there were large storage pits with plastered walls. However, some small pits of the same type were found to contain burnt animal bones, ash and charcoal. There were steatite, carnelian, agate, lapis lazuli and terracotta beads and there were bangles of terracotta, faience and shell. A steatite seal was found to contain a geometrical design. The other finds included chalcidony micro blades, bone points, copper arrowheads, antlers, grinding stones, etc.

Other excavated early Harappan levels in Haryana include those at Siswal (Bhan 1973), Balu (IAR 1983-84), etc. but apart from the ceramic details there is hardly anything interesting at these sites. In eastern Punjab Mahorana in the Sahiwal district shows in its early Harappan phase (Bala 1992: 38 ff) some Kalangan early Harappan type of pottery, traces of mud-plat forms, *tan* and *red* wares, terracotta bangles, beads, necklaces and carterries, and steatite and faience beads. Rohra in the same district seems to be another site in Punjab where some early Harappan remains have been excavated (Bala 1992: 40 ff). It may further be noted that in the Mansa tank tensil of the Bhatinda district in Punjab, eight pre-Harappan and Harappan sites located at Gumkaran, Hassanpur, Gurna, Bagli, Jodanah, Lakhmawala, Narwala, Theh and Dhalewan are huge in size (Bala 1992: 28 ff).

A date from this level at Balu is around the middle of the second millennium BC, but there are three earlier dates as well, roughly between 2100 and 1800 BC. The early Harappan dates from Kalibangan are particularly consistent. Out of ten such dates, two are plainly in context (TF 439 uncalibrated 4750 ± 130 BC, TF 457 uncalibrated 4750 ± 215 BC), there are three dates with metal points around 2800 BC, calibrated, but the other dates are in the second half of the third millennium, some being as low as 2200-2100 BC.

The issue of a pre-Harappan phase in Gujarat has been kept alive since S. R. Rao (cf. 1963) clearly reported a micaceous ware of the Harappan context in the region. M. K. Dhavalikar and G. L. Possehl (1992) have discussed the evidence from Nagwada in the Rupen estuary, Dholavira in the Great Rann of Kutch and Prabhas Patan (Somnath) on the west coast of the Saurashtra peninsula. To begin with, no separate and pre-Harappan micaceous ware level could be isolated. Secondly, even at Nagwada, although some pottery from a burial site is supposed to have possessed affinities with the Amri pottery in Sind, the premise of an Amri connection in pre-Harappan Gujarat is **certainly not beyond dispute**. Again, the two early radiocarbon dates from the earliest level at Prabhas Patan (2800-2900 BC, calibrated) are no doubt interesting, but one notes that as late as in 1984 Dhavalikar (1984) was arguing that a pre-2000 BC calibrated date for this level was unlikely. The only solid evidence in this regard has emerged from Dholavira where R. S. Bisht (1991) has stratigraphically isolated a pre-Harappan culture (60-70 cm thick) which shows wheel-made red and comb-incised/reserved slip wares. The occasional addition of white to otherwise dark coloured painting has been considered by Dhavalikar and Possehl (1992) interesting because 'painting in white is one of the hallmarks of the Early Harappan, occurring in the Amri, Na, Kot Diji and Sothi complexes'. Bisht reports a good knowledge of the uses of copper. The clarity of this evidence leaves no doubt as to the extension of the early Harappan in Gujarat.

Having reviewed the basic available evidence, its chronological aspect should be brought into sharper focus. In the Cholistan area, from where our review of the evidence began, the base line is the Hakra ware for which there are 99 sites belonging to a four-tiered settlement hierarchy, indicating a well-defined occupation area in the valley of the Ghaggar/Hakra. I need not comment on its origin but in view of the fact that no ring or archaeological has come out of the botanical premise of its presence in the Ghaggar/Hakra coupled with signs of burning in the pottery of the Silt Lakes of Rajasthan, the origin of the Hakra ware complex may be viewed as having something to do with a mixture of the local hunter-gatherers identified in the Indian section of the Indus valley and a 'neolithic' impulse from the hills of the north-west frontier. It is interesting to note here that a major ceramic assemblage with a fourth millennium BC site of Sheri Khan Tarakai in the Punjab may well be identical with the Hakra ware, although it must be noted that there is only one more recorded site of this type in the Punjab, the personal information from J. R. Knox (Mughal 1990: 106).

writes that this complex could have begun in the first half of the fourth millennium BC.

This, incidentally, makes it as early as, if not earlier than the period IA at Amri in southwest Sind where the focus is really on the Kirthi piedmont and Kohistan, because, as has been pointed out by a number of scholars (cf. B. and F. R. Allchin 1982: 141, the location of Amri at the edge of the Indus floodplain), no site at this period is located in the Indus floodplain proper. Although the Kot Diji level has been typified at the site of Kot Diji around a rocky outcrop near Khairpur, the densest concentration of Kot Diji-related early Harappan sites is in Cholistan where Magnal (1960) points out there is a four-tiered hierarchy of settlements with at least two sites falling in the 20-1-30 ha size bracket. Chronologically this falls in the second half of the fourth millennium.

The third date is typified by the early Harappan level at Harappa. There are geographical queries in this regard, but on the whole it is not an improbability that the early Harappan presence in the Harappa area was a part of the general distribution of similar sites in the upper reaches of the Ghaggar-Hakra. In the west these sites reach out as far as the Ravi, and even in the Ravi belt the number of sites is strictly limited. On the other hand, the distribution of sites greatly increases in the direction of Ferozpur, Bhatinda, Kapurthala, etc. So there is a possibility that the growth of villages in the Ravi stretch of Punjab was a part of the general eastward spread of the early Harappan horizon along the Ghaggar system. In any case, as I have already mentioned, the calibrated dates of Period II, which is considered transitional between the early Harappan and mature Harappan levels at the site, hover between 2500 and 2300, with only a single date from the earlier period going back to 3200. It is unlikely that the early Harappan horizon in the Harappa area begins before—or at least significantly before—3000 bc. In fact, the chronological spread of the early Harappan level at Harappa seems to be something like the chronological situation of this level at Kalibangan, where at least there are three relevant dates with initial points around 2900/2800 bc. In modern Haryana which is further upstream a tributary of the Ghaggar system there is no radiocarbon date from the early Harappan level, but in view of the mature Harappan dates from Banawali, the early Harappan levels of the region are likely to belong to the first half of the third millennium. The situation in Gujarat, as typified at Dholavira, is still uncertain. The Gomati valley near its junction with the Indus, where the earliest sites are in fact located on an old terrace of the Indus, shows a clear progression in the growth of village settlements in the sense that here the Kalibangan

reaches higher than dates from c. 3000 BC with two earlier village levels in the area.

On the basis of the conclusion does this resume of dates in various areas bring us? Only in three of the areas which I have considered relevant to the growth of the Indus-Harappan civilization is there a clear sequence of village sites, from the Kutch and Kharakhra piedmont and Kohistan to the west-southwest of the Indus flood plain in Sind, the Cholistan area and the Gomati valley where the earliest sites are located not so much on the banks of the Gomati as on the alluvial terrace of the Indus. Of these three areas only Cholistan can boast of a dense and well-integrated distribution of the early Harappan sites to be followed by more dense and equally integrated mature Harappan sites (174 in number, as compared to 138 in Rajasthan-Haryana-Panjab and 104 in Gujarat). There is more than an even chance that it was in the Chohargar-Hakra system in Cholistan that the transition from the early Harappan 'culture' to the mature Harappan 'civilization' was completed.

Before examining the possible causative factors behind this transition, let us first offer explanations of the origin of the Indus civilization, if it is important to examine whether the geographical premise just offered fits with what is known of the prehistoric physical geography of the Indus and the Chaghar-Bakra plains. In the context of Sind the details of the history of the settlement during the prehistoric period have been worked out (Hajj 1981).

At a place about 100 miles from the mouth of the river, the course of the river has shifted to the south sometime in the last few centuries. The core of the present course of the river is said to be older than one thousand years old. There are, therefore, no direct epigraphic or literary references to the past courses and around surveys of the Lower Indus Basin during the fourth and fifth centuries. In the western part of the region I have chosen to name the second, in the eastern region the Nara Nadi, the course of the Lower Indus Basin at the present day. A short distance west of Kandhkot, the river's course turned west of Shikarpur and Rotodero, through Warrah and west of Mehr the course continued in a southerly direction down the valley of the Lower Indus Basin, through the Mitha Lake area. The course subsequently followed past Sehwan. To the east of Sehwan landforms of the Sindhu, obliterated by the present-day course of the Indus river. The course of the Sindhu Nadi can be traced on the aerial photographs

See p 25 map

southeast of Nawabshah. In this area the river followed a southeasterly course through the town of Samaro and joined the course of the Nara Nadi, south of Naskot.

In the eastern portion of the Lower Indus Basin the Nara Nadi was a perennial river whose course is known by different names along its length. From Fort Abbas to Fort Derawar it is known as the Hakra river, and is marked by a depression which is clearly visible on the aerial photographs of the region. Southwest of Fort Derawar, the course of the Hakra becomes increasingly unclear and intermittently becomes "lost" beneath sanddunes which have encroached upon the area. Remnants of the river's course emerge where dunes are less numerous and thus can be aligned with the Rami and Vahinca channels. South of these latter two channels, the Nara Nadi can be clearly traced as a depression southward along the eastern edge of the Lower Indus Basin, where it was eventually joined by the Sindhu Nadi.

There can be little doubt that the coastline of the Lower Indus Basin during the fourth and third millennia was located a good distance north of the present-day location. Present research suggests that the delta of the Sindhu Nara Nadi was located in the southeastern portion of the Lower Indus Basin. Through the centuries the delta slowly moved to the west and southwest, pushing the coastline to the south. During the prehistoric period the central and western portion of the Lower Indus Basin was probably a bay, with the coastline located somewhere north of Tutta and south of Hyderabad. Terrestrial Kutch probably consisted of an island or islands and can be considered part of the Lower Indus Basin.

The major ecological resources of the Lower Indus Basin were its perennial rivers with seasonally high, overbank floods and fertile alluvial soils (Flam, 1981: 52-3).

In the light of what is stated above it is hardly a matter of surprise that the number of mature Harappan sites in the floodplain of the Indus Nara interfluvium in Sind proper should only be fourteen-fifteen (Flam, 1981: map) whereas an equal number, if not more, of these sites have been found in the Kirthar piedmont and Kohistan. In Flam's map the combined stream of the Indus and the Nara flows into the Rann of Kutch and thus the mature Harappan sites in all the three areas of Gujarat, the peninsulas of Kutch and Kathiawar and the mainland Gujarat, form a part of the dissemination of the mature Harappan sites along the Nara-Hakra into Kutch first and then into Gujarat as a whole, and it is also natural that an early Harappan level should be isolated in Kutch as has been the case at Dholavira. If one were to comment on the location of Mohenjodaro at this stage, one would point out that Mohenjodaro is located half way between Sukarapur at the mouth of the Kachhi plain and Sehwan and thus, apart from being located in the most fertile part of Sind, was centrally positioned in

relation to the resources of the Kirthar piedmont and Kohistan and beyond in the one hand and the goods coming down the Bolan and reaching the Indus through the Kachhi plain on the other. The whole area constitutes a clear and distinct economic zone of the Indus civilization and no doubt of its formative stage as well. However, as I have argued, the primary and economic zone lay in Cholistan.

Regarding the course of the Hakra I have cited Flam in the context of Sind. Further up, its course is reasonably clear up to the Panjab foothills and so is the outline of its tributary system which incorporates the ancient origin of the modern Chautung. On the Indian side of the border the original course of the Ghaggar is several kilometers wide. Does it mean that in the protohistoric period the river was flowing in a single sheet, carrying a tremendous and uncontrollable volume of water as the major rivers of Bangladesh do today? The issue is not easy to settle, but there are some indications. On the basis of the presence of gazelle bones (Tilgner, Maghaz, 1980) has inferred the prevalence of an arid climate in the protohistoric context of that area, and this seems to be the opinion of H.P. Tandon (1992) in the case of the Harappan region as well. The basis of Tandon's opinion is the geological stratigraphy of the Ghaggar system in the Harappan region as reconstructed by M.A. Gauri.

... the system is more than 1000 years old, started in alluvial deposits corresponding to the constant flow of rivers rising in the Himalayas and supplied by the melting of ice, active upto around 20000 BP.

... the system is a result of the process of erosion and deposition of the river, which is a result of the melting of ice, active upto around 20000 BP.

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nor a rainy phase which refutes two of the most widely accepted hypotheses. However it still provides no clue as to the spatial distribution of sites at the regional scale (Francfort 1992: 25, 92).

We can visualize the situation in the following manner:

Within the 8 km broad limits there was a channel which, although basically dry in the summer months, carried a lot of water during the rains in the mountains, as the defunct channel does so partly, and up to the vicinity of Hanumangarh in Rajasthan, even now. It was this water which must have been tapped by the canals postulated by Francfort. Otherwise in the dry months of the year, the braided shallow channels of the Ghaggar-Hakra flow or ancient Sarasvati formed lakes, lagoons at various places and it is possible that such areas were distinctly preferred by the protohistoric inhabitants of the area. The snow-fed Indus has always been a very difficult river to control; in the Indian tradition it is a *nad*, the masculine form of the term *nadi* which is feminine and used to denote the general range of rivers in the subcontinent. On the contrary, the potential of the shallow braided channels of the ancient Sarasvati was much easier to utilize, just as the neolithic settlers of Mehrgarh decided to settle in a zone where the hill streams, once they entered the Kachhi plain, got dissipated in to numberless courses. This postulated environmental setting may also explain the concentration of protohistoric sites in Cholistan, Rajasthan, Haryana and Punjab in a few pockets (cf. maps of the area in Mughal 1990; Joshi, Bala and Ram 1984; Francfort 1992).

ORIGIN

While discussing the origin of the Indus civilization, one may begin with two points, one positive and the other negative. The positive point is that the Kot Diji-related horizon or what Mughal insists on calling early Harappan is indeed the most immediate foundation or basis of the Indus civilization. I accept in its essentials Mughal's arguments in his 'Discussion of the early Harappan' in 1990 (Mughal 1990). Firstly, I agree with Mughal that the settlement pattern during the early Harappan phase in Cholistan shows a four-tiered hierarchy (0.1–5 ha., 5.1–10 ha. and 20–0.1–30 ha.) which was not 'undifferentiated'. Secondly, on the basis of the data available from Rehman Dheri, Kalibangan, Banawali, sites at Kohistan, etc. I believe that the architectural range and pattern of the mature Harappan settlements was very much within the technical competence acquired by the early Harappan phase in this regard. I agree with Mughal's statement (Mughal 1990) that 'there is no marked difference between the industrial specialization at Chanhudaro, Lothal'

Mohenjo-daro and any Early Harappan site. The absence of an 'elite population' and of writing should not be an issue in the early Harappan context because these are among the crucial traits which one associates with 'civilization' which the mature Harappan context undoubtedly was. I accept although the concept of an 'elite population' is not a very clear one the problem is not that these features are absent in the early Harappan phase. The problem is rather to know how these features came into sharp focus with the emergence of the Indus civilization. I also support Mughal's premise that the character of the distribution of Kot Diji sites in Cholistan underlines its status as 'a unified, organized, integrated social and economic system', although I feel reluctant to visualize it as a stage of early urbanism, as Mughal does, because of the absence of direct, indirect evidence of writing in the archaeological records of this phase.

My negative point in this context is about the role of external trade as a causative factor of Indus urbanism. Mughal (1990) argues that at the beginning of the mature Harappan phase there was a shift in settlements towards the Gujarat and Makran coasts. He further believes that this significant shift brings up the role of trade in the cultural processes leading to the urbanization of the Indus civilization. However, he is cautious enough to add that, 'this line of argument may have to be reconsidered if the Kutch region also produces evidence of Amri or Kot Diji-related settlement'. Now that an early Harappan level has been discovered at Dholavira in Kutch, this part of Mughal's argument is obviously no longer valid.

Joshi (1990) apparently sets great store by the value of external trade as one of the two causative factors of the Indus civilization which have been suggested by him.

I have defined, focussing to some degree on the Mesopotamian contact (known to them as Meluhha) may have played a significant role in the process of paroxysmal change that seems to have led to the emergence of Indus urbanization (Possehl 1990: 276–7).

I should not have meant India alone, and I have to stress what I meant in 1990.

The beginning of the Mesopotamian Meluhha trade. Second, I want to argue that the long-distance external trade of the Indus was concomitant of the Indus civilization. This trade did not involve Mesopotamia and the Gulf were outside the Early Harappan orbit, and a large part of Iran. The only area where there was an external trade with the Early Harappan stage was the area between the Indus and the Persian Gulf. For the Sumerian stage, the trade with the beginning

of the mature Harappan period. We, in fact, find it difficult to suggest a causal link between the Indus external trade and the genesis of the Indus urbanism (Chakrabarti 1990: 169).

I would like to stress further that the tendency to invoke external trade as a causative factor of change in the context of ancient India with regard to going into the quantum, chronology and various other related historical aspects of this trade is, to interpret it most charitably, just another way of invoking diffusion foreign influence as the divine instrument of change in this context. Such attempts are also intended to relate the development of the Indus civilization in some way to the Mesopotamian situation.

The second factor suggested by Possehl (1990) is certainly more interesting.

Strong lines of continuity notwithstanding the peoples who made and used the material culture we associate with the Harappan Civilization created a distinctive set of signs and symbols that can easily be differentiated both from what came before it and from the material culture of the contemporary peoples in adjacent regions. It is conceivable that this set of distinctive signs and symbols could ultimately be traced back to a set of precepts that form some kind of Harappan 'ideology' involved in the revolution of change. (Possehl 1990: 272)

This is a perceptive point but the problem is that unless the Indus textual sources can be read with satisfaction, this probable role of ideology will have to remain uncertain. I also do not believe that there is any purpose in speculating, as Possehl (1990) does, as to whether the transition to the Indus civilization was achieved slowly or in a 'pangloss of change'. It is not at all a relevant issue. I admit that there is a qualitative change between the pre-civilized stage and the stage of civilization but it may be impossible to pinpoint when the transition (or 'leap' if one prefers) occurred when 'quantity' passed over into 'quality'.

I have so far only expressed my agreement or disagreement with some of the ideas put forward to account for the origin of the Indus civilization. But leaving aside the issue of the ideology of the related social and institutional framework of which there is no proper comprehension at present, what are the variables to which particular significance would be attached in this context? Before discussing this, however, I may refer to my opinion that the transformation from the pre-civilized early Harappan stage to the civilized mature Harappan stage took place in Cholistan, and in the Ghaggar-Hakra valley where the process of desiccation of H.F. Francfort's opinion based on M.A. Courty's analysis is true, had already begun and the river was flowing through shallow braided channels,

creating ox-bow lakes in places. The Indus was flowing to its west but also through a semi-arid environment which could not be far removed from what it is today in this area. The Ghaggar-Hakra flow eventually joined the Indus and the combined flow went into the Rann of Kutch. Upstream in Haryana the Ghaggar-Hakra course has a large concentration of early Harappan sites and although this concentration dates later than that in Cholistan, the Ghaggar-Hakra course as a whole may be assumed to have belonged to the more or less same environmental setting.

In the context of the Indus valley the decisive step in its settlement history was the growth of human occupation in the floodplain itself. The early Harappan settlements were located in the Kirthar piedmont and Kohistan. It is only during the mature Harappan 'civilized' phase that we find settlements, one of which was Mohenjodaro, in the floodplain. This decisive step in the settlement history of Sind needs an explanation for which one has to take into consideration the basic geographical setting of the Indus valley before the introduction of modern irrigation canals. A detailed research on the pre-modern agricultural geography of Sind is possible on the basis of the records of such pre-modern Sind rulers as the Nawabs of Lapar and the accounts left behind by the first British administrators of the province, but pending this kind of research one may turn to the description of the valley in *The Imperial Gazetteer of India* (vol. 23) published at the beginning of this century (1908). The plain is well described:

Detritus is blown from the turbid hill torrents a greater quantity of detritus may be carried forward by its diminished velocity in the plain, and hence a continuous deposition of silt takes place along its various beds, raising their level above the level of the surrounding country and consequently affording an easy means of irrigation in which the agricultural prosperity of Sind entirely depends. (The *Imperial Gazetteer of India*, vol. 23, 1908)

The importance of irrigation has been strongly emphasized in the *Imperial Gazetteer of India* (vol. 23, 1908):

The fertility of the soil and the almost absence of rain render irrigation a matter of the greatest importance. Sometimes, indeed, for two or three years in succession whatever falls in the province. Under these circumstances the fertility of the soil is to Egypt. When the province was annexed in 1843, no irrigation canals existed which derived their supply direct from the Indus. The water is carried away from the river bank in the direction the flow to reach the fields that are to be irrigated. None of the water is lost by evaporation or by absorption during the irrigation season. The river must consequently rise several feet

before the canals will fill. Many of these canals are but old deltaic channels reopened and extended, and all have the appearance of rivers rather than artificial cuts.

The gazetteer (pp. 393–4) also contains information about the climate and pre modern agriculture in the valley

Owing to its prevalent aridity, and the absence of the monsoons, the Sind ranks among the hottest and most variable in India. . . . No other part of India has so long a continuance of excessively hot weather, owing to the deficiency of rain. . . . On the verge of two monsoons, Sind is unrefreshed by either. The south-west monsoon stops at Lakhpat in Cutch, in the south-east the north-east monsoon passes no further than Karachi in the extreme south-west. The rainfall of Sind is thus scanty and irregular, and it averages only about 8 inches. The record of series of rainless seasons is occasionally broken by a sudden excessive fall.

The gazetteer (p. 412) stated the agricultural regime of the province to be:

The soil of Sind is plastic clay, deposited by the Indus. With water, it degenerates into a rich mould; without water, it degenerates into a desert. There are two principle harvests—the spring or *rabi*, sown in September, October or November, and reaped in February, March, or April; and in autumn or *kharif*, sown during the floods of the river from May to August, and reaped from October to December. The *rabi* harvest consists of wheat, barley, gram, vetches, pulses, and vegetables. The *kharif* includes the millets known as *bajra* and *jowar*—the chief foodgrains in Sind; rice, indigo, *san* hemp, pulses, and cotton.

In 1988, I (Chakrabarti 1988a: 96) suggested the possibility of millets being an 'integral part of the Harappan crop-system'. In view of the present modern agricultural geography of Sind, it is a logical inference and the reason for millets not being found in the mature Harappan assemblage of Sind may simply be due to the fact that these have not been looked for in the relevant excavations.

The premise of the invention of an irrigation system before the collapse of the Harappan civilisation to the floodplains cannot regrettably be corroborated by the data from Cholistan because the details of the river courses and site distributions are still unpublished, but some indications have emerged from Francfort's work at Harappa (1992).

Francfort's summation of the geological stratigraphy of this area has been cited. Here his observations on the postulated canal system are given:

These genuine natural, hydrographic fossil systems, which are much smaller than the great Chazagor, and almost invisible on the surface and are not accessible to the eye, can be examined by means of trial-pits. The canals are represented in the trial-pits as depressions about 1 m deep and 300–500 m wide. They mark the traces of ancient natural waterways which were used and perhaps, in some cases, even created by man. These traces of small river channels . . . appear to have been used at the archaeological sites. . . . Not only did they supply with water the settlements, but they made the surrounding area more fertile than the natural soil. . . . The picture we are left with is that of a small-scale system, less extensive than the great hydraulic works of Mesopotamia or Central Asia during the same period. But here, as well as there, the spatial unit is the network, or the branch, or the cluster of networks which mark the ground and define the fertile area is for farming (Frankfort 1992: 98–100).

I would also like to draw attention to the increasing level of craft specialization from the early to the mature Harappan levels. The issue has been touched upon in a perceptive piece of analysis by J.M. Kenoyer (1992). He was able to isolate a ceramic production area on the north-eastern slope of Mound E at Harappa, where he found pottery manufacturing kilns at both early and mature Harappan levels. The area was used for ceramic production right from the time the site was inhabited. Although this does not suggest control of the production of pottery by any external authority, the evidence suggests that this particular area was *not* used as a specialized production area because 'the potters were not limited to producing specific types of vessels'.

At the same time, in the context of craft-specialization at least three things must be taken into account. First, there is hardly any major change in the types of raw materials used between the early and mature Harappan contexts except trade in the latter context at Mohenjodaro and Harappa. Second, the sources of all these raw materials are not located at a great distance from the distribution area of early and mature Harappan sites. Third, the raw materials could come as jadeite from Kishnour (or from central Asia) or as turquoise from the Oxus valley. This may also serve the purpose of the fact that the mature Harappan long distance trade was not a major factor in the sustenance and/or survival of the Indus civilization. Although the pattern of use of raw materials does not change from the early to the mature Harappan levels, the degree of use increases. Narain and Lahiri's work (Lahiri 1992) clearly demonstrates this. The increased use of raw materials could be another variable in the development of civilization in this context. In the same way, there is some ground to infer that the discovery of extraordinarily

rich copper objects belonging to the Ganeshwar culture in a copper mine area of the Aravallis in northeast Rajasthan underlines in some way the increased use of raw materials. This culture certainly belongs to the first half of the third millennium BC. Among other things, the Ganeshwar type of artifacts has been found in the early Harappan assemblage at Kalibangan and at the mesolithic level at Bagor in southeast Rajasthan. The point is that this small site in Rajasthan yielded more than a thousand copper artifacts and there are forty-six Ganeshwar-type sites in the list prepared by J.P. Joshi, Madhu Bala and J. Ram (1994). The presence of reserved-slip ware at these sites strongly suggests a Harappan link, and I infer that, beginning with the early Harappan level, this area of Rajasthan was a highly flourishing centre for copper metallurgy and its relationship with the early Harappan level at Kalibangan and probably beyond, as far as Cholistan, supports my assumption of craft-specialization as a distinct variable leading to the emergence of the Indus civilization.

Thus, it is postulated that within the framework of an ideology which cannot yet be defined in concrete social and institutional terms, an irrigation system, however simple, to cope with the problem of settling down in the riverine plains, and increased craft-specialization as seen in the presence of a large number of raw material types in the early Harappan level and the copper metallurgical area of the contemporary Ganeshwar culture, were two key variables in the emergence of the Indus civilization. If one accepts Fekri Hassan's argument that 'the key variables in the emergence of civilization consist of the large size of agricultural communities, their sedentariness, and the increase in the number of consumers relative to foodproducers' (Hassan 1981: 257), one has perhaps cited here an arguable case in the context of the Indus. But then one should also humbly admit that 'interpretative theories for the rise of civilization remain in the form of plausible stories—logical, but not objectively confirmed' (Redman 1978: 346).

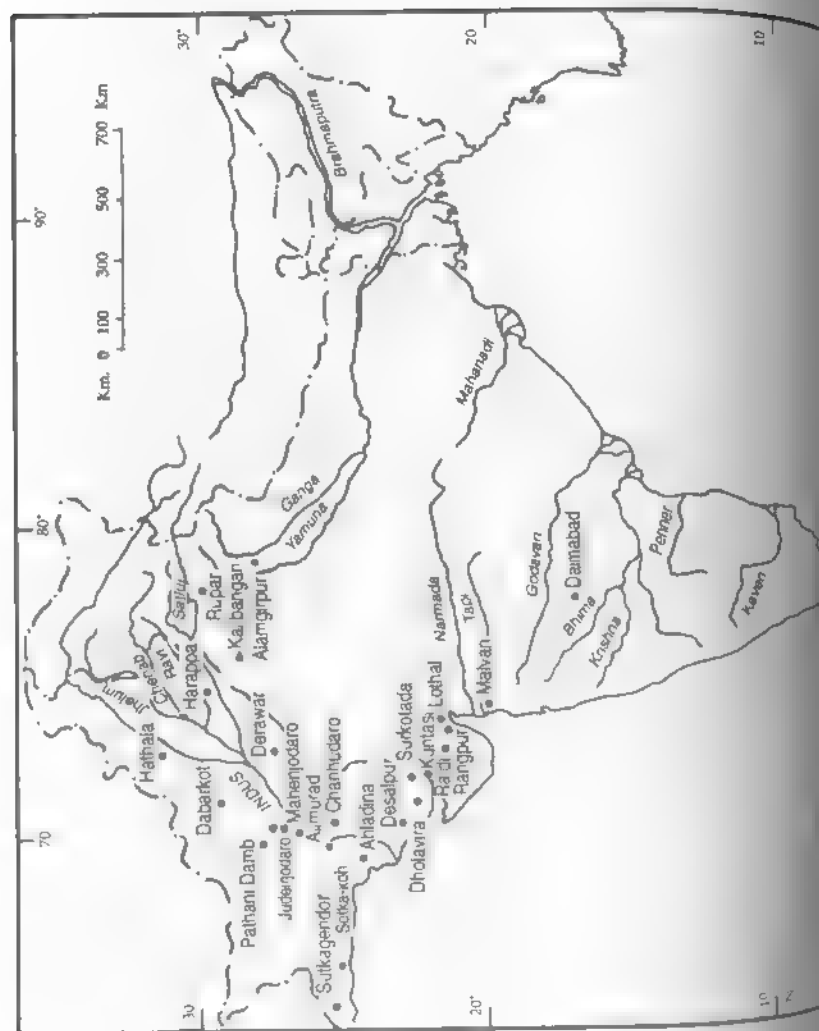
Chapter Three

Harappan Settlements

NORTH AFGHANISTAN AND BALUCHISTAN

The site of Plain of Shortughai (Francfort 1984, 1989) is near the confluence of the Oxus, Amu Darya, river and one of her tributaries, the Kokcha. This river comes down the Badakhshan hills famous for their lapis lazuli and ruby mines (for the presence of ruby mines: 'for which Badakhshan has long been famous', IGI, vol. 6, 1908, p. 176). The lone Harappan settlement in this plain, which is about 5 km away from the Oxus and about 25 km away from the Kokcha, is the earliest of the seven (Period I) Bronze Age sites in the region. The evidence of both dry-farming as suggested by the discovery of a ploughed field covered with flax seeds and a culture based on canal irrigation has been found in the same site. This period of the Harappan occupation deposit in Shortughai covered an area of 2.5 hectares (ha.) and was 50 cm thick in its Period I but its contents of pottery, terracotta, metal objects, raw materials such as lapis lazuli, carnelian, turquoise and steatite, sea shell bangles, etc. and the architecture with bricks of the Harappan size (32 by 16 by 8 cm) and the site with pictographs, graffiti, etc. was identical with that of the Harappan site (Francfort 1989). The identity extended even to the field of firing techniques which are well-known in the Harappan sites in Central Asia. Further, baked pebbles have been found in the earths to maintain heat for any domestic or artisanal use' (Francfort 1989).

The earliest Harappan foundation in this area is dated to the second quarter of the third millennium BC. The physical presence of the Harappans near Badakhshan in the region raises more questions than it answers, especially when compared to the site beyond the limits of the subcontinent. It is, however, as I have pointed out before (Chakrabarti 1989), 'the Harappans were using one of the Panjshir valley for orientation towards Kabul'. The region is essentially mountainous, with its peaks occasionally



touching the 11000 ft (3352.8 m) level. In Fairervis' analogy (Fairervis 1956-183, Baluchistan is like surf on the sea-shore, the shore being the Indus valley and the high waves being represented by the high mountain ranges of Central Asia. Northeast Baluchistan, with Quetta at the head of the Bolan pass as the central node and Marri-Bugti country to its south-east lies between the arcs of the Sulaiman range in the south and the Toba and Kakar ranges in the north. The Zhob, Loralai and Beji are the principal rivers which drain this area. Beyond Quetta the Afghanistan border is marked by the Khwaja Amran range, with the Pishin Lora flowing below. The Kachhi plain is below the Bolan pass and to the south-east of Quetta are the territories of Kharan, Sarawan, Jhalawan and Las Bela which include the Kalat plateau and are all ensconced in a number of major (roughly) northeast-southwest ranges which are known as the Ras Koh, Central Bruhui, Pab and Kirthar ranges. The Nari drains the Kachhi plain whereas the Hab and the Mula flow across the Kirthars. The Pural flows into the Sonmiani bay in Las Bela. To the north of Ras Koh is the Chaghi hill on the Afghanistan-Seistan border, with two desert depressions (Hamun-i-Lora and Hamun-i-Mashkel) in the area, while to its south are the Makran ranges including the Makran Coastal Range parallel to the coast. The Hingol and the Dasht carry the main drainage of Makran, with the Rakshan as the major river to its north. There is a difference in rainfall between the highlands (about 10 inches annually) and the plains (annual rainfall 5 inches, decreasing to 3 in some areas), and Baluchistan on the whole is a singularly arid area, although 'this is relieved in places by level valleys of considerable size in which irrigation enables much cultivation to be carried on and rich crops of all kinds to be raised' (IGI, vol. 6, p. 267). Or again:

Where the narrow glens, whose rippling watercourses are fringed by the brilliant green of carefully terraced fields. Rows of snow-white flowering festoons of vines, border the clear water, while groups of children and comely Italian-faced women in indigo-blue or scarlet robes complete a peaceful picture of beauty and fertility. Few places are more beautiful than Quetta on a bright frosty morning when all the peaks are capped with glistening snow, while the date-groves, which are the living settlements of Makran, are full of picturesque attraction. The high mountains and gorges in the upper plateau make a fierce contrast to the peacefulness (IGI, vol. 6, p. 267).

Whether the region enjoyed a wetter climate during the prehistoric period, as suggested by Aurel Stein (1931, cf. p. 2), is far from clear, but it was made out against it by R.L. Raikes and R. Dyson (1961).

In the uplands of Baluchistan the Harappan sites are understood to be limited in number, and such sites as exist have been primarily interpreted as trading settlements, a logical enough hypothesis to account for their specific geographical locations. For example, Dabarkot (Stein 1931: 55–64) in north Baluchistan, where extensive Harappan deposits are visible atop a mound with a basal diameter of 1200 ft (365.76 m), lies on an ancient trade route from the Indus valley in the direct line to Kandahar (Wheeler 1968: 62). One is not, however, sure if the major Indus sites in the Kachhi alluvium such as Natsharo and Jaderjodaro can be interpreted only as trading settlements because even in the early part of this century Kachhi was producing three crops a year and some Kachhi bullocks had a market in Panjab. The Harappan settlement at Nausharo (Jarrige 1989) showed evidence of building blocks separated by parallel streets, bathrooms connected by terracotta pipes with soakage pits on the side, huge mudbrick platforms, etc. It has further been argued by Jarrige (1989) that there was at Nausharo 'a monumental canal' or a large water tank 'into which had been set a baked brick spillway for water, comparable with the spillway of the so-called dockyard of Lothal.' Another interesting feature at Nausharo was the use of wooden beams blocked with pebbles and clay at the foundations, the use of pebbles being a new feature here. Jaderjodaro is another major Harappan site in the Kachhi plain. About 18 miles northwest of Jacobabad, it occupied 'an important position along the highway long used to connect the lower Indus basins with Baluchistan and Afghanistan' (Pakistan Archaeology 1: 11–12). Apart from the main mound where rainwater gullies may indicate ancient streets, there is a row of five mounds, slightly isolated from the main one, and all the mounds cover a total area of 600 by 400 yards (548.64 by 365.76 m). Parham Dambs at the mouth of the Mota pass on the Baluchistan side and 'consists of a series of continuous ridges and hillocks covering a vast area and including a higher central mound'. Its location suggests that this town may rank with Mohenjodaro and Harappa as a metropolitan centre of importance in the civilisation of the Indus valley (Pakistan Archaeology 1: 28). In the Khurkera alluvial plain on the northeastern side of the Las Bela and the Sonmiani bay the site of Balakot (Dales 1976) which measures 180 by 144 m (about 2.80 ha, 6.94 acres) and is divided into a high western mound and a lower eastern one, shows in its Harappan level a wide east-west lane bifurcating the area at right angles to which there are two smaller lanes. Mudbrick is generally used but burnt bricks have been used in some drains. There is a thin pavement of the floor in some rooms. The floor of one room is ornately paved

with square tiles decorated with impressed intersecting circle designs. Another room, presumably a courtyard, is lime-plastered with a circular depression in the centre, which contains the remains of a wooden column. A wooden threshold has been noticed in some cases, and at least there is one complete example of a bathroom with a ceramic tub (with intersecting circle designs on the inner side of the bottom), a hearth, a buried storage jar and a drain made from a broken pot. One room measures 2.20 by 3.20 m. There is no positive evidence of an enclosing wall but a large Harappan kiln has been traced along with smaller ovens for baking animal bones. There is a painted jar of possibly Persian Gulf origin in the Harappan level at Balakot, fitting in with the emphasis during this period on the use of sea and marine sources like fish and shell. Of the latter there was obviously a flourishing industry.

The hilly terrain to the north of Bela which is cut by the Porali, Hingol and Harni rivers has some major Kutch-related settlements with clear evidence of Harappan contact. The better known sites of this area are Nari Bath (Jarrige 1971: 189–94), Nindowari (Casal 1966 and Edith Stein Jarrige 1971: 195–205). Among these, Nindowari may serve as an example. Large stone-built platforms rising in receding stages to the top of the hill which possibly contained stone or rubble structures seem to be the key feature of Nindowari, possessing a single radiocarbon calibrated date at the middle of the third millennium BC. In the Las Bela complex Jarrige (1971) reported some usual settlement remains which indicate that during the period of the Indus civilisation the southern part of Las Bela and the northern section of Las Bela contained a number of settlements of which I am not fully aware except that they were otherwise associated with the Kutch culture. It is also interesting that these settlements are located in the copper-bearing areas of Las Bela (Lahiri 1972: 23).

The location of Harappan settlements is explicit in the Makran coast. From the coastal strip of Makran to inland Baluchistan there are two main regions, the valleys of the Dasht Kaur and Shadi Kaur, and each of them had a fortified post—Sutkagendor and Sotka Koh. The site of Sutkagendor (Mockler 1877, Stein 1931: 60–71, Dales 1976) is about 30 miles away from the sea, at the eastern edge of the Dasht Kaur valley. As early as in 1877 Major Mockler recorded a local tradition that the sea once reached as far up as Sutkagendor which was a tradition that was only the Baluchi way of accounting for the presence of other marine deposits belonging to the geological period of the Pliocene (Mockler 1877: 126). Stein was equally sceptical but he took

care to point out that the site occupied a position which was the converging point of a number of routes from small fishing harbours in the area and could have the same significance in the protohistoric period. Dales has argued that 'a slight lowering of the coast line level and the removal of 4000 years of alluvium and wave deposited land would probably allow the waters of the Arabian sea to extend up the Das Bela valley, at least as far as Sutkagendor. Even under present conditions small boats can navigate almost 15 miles up the river from the sea' (Dales 1962). The argument was also subsequently put forward but the issue is still uncertain; Dales (1979) himself does not infer any coastal change in the context of Las Bela which is located next to the Makran coast in the east.

The nucleus of the Harappan settlement at Sutkagendor is an irregular walled enclosure measuring about 197 yards (180.13 m) from north to south and 113 yards (103.32 m) from east to west. Its northern and southern sides are natural, formed by two ridge lines. These are joined at their ends by two north-south walls made of large slabs set in clay mortar and 'oriented within one degree of the magnetic compass' (Dales 1962: 89). The thickness of the eastern wall at the point of Dales' operation B is 7.45 m. There were perhaps mudbrick structures on its flat top, about 3 m wide at this point. Inside the enclosing walls there was a 3 m thick Harappan occupational deposit with a few jerry-built walls of a later date. Here Dales (1962) distinguished three phases.

The enclosing stone walls belong to Phase I and 'at the same time a large mudbrick platform about 2.5 m thick was built against the inner face of the stone wall' (Dales 1962: 88). The second phase consisted of a floor of packed earth laid on a 30-45 cm thick stone filling above Phase I. Parallel rows of stone foundations characterized the final Phase III. One of these 'stopped about 1.75 m before reaching the citadel wall platform probably to provide a passage way. This passage way was later blocked, however, by a secondary wall of less carefully laid stones' (Dales 1962: 88). At the southwestern corner of the enclosure Stein noticed that 'very massive foundations of what may have been two towers clearly marked the gate' (Stein 1931: 62). Besides this, Dales' plan shows at least two more possible salients or bastions. 'At the base of the citadel, around its northern and eastern sides are the fragmentary remains of a small, older town' (Dales 1962: 88). There are surface indications of structures here but the stratigraphy of 'the lower town' in Dales' operation is a 4.5 m sterile silt and sandy deposit (Dales 1962: 88).

The position of Sutka Koh (Dales 1962: 91) is somewhat like Sutka-

gendor. On the top of a natural rock formation, the site is still unexcavated but the remains of a large stone wall, at least 500 m long, were clearly visible along the east edge of the site. There were no clear indications, however, that the walls continued around to form an irregular enclosure as at Sutka-gendor.

Another site of this type has been added to the list by Snead (1967: 560) at Kharan Koh on the west side of the Las Bela valley. This site, the details of which are not published, is 25 miles from the coast line but has been interpreted by Snead as a possible Harappan port.

SIND

The lower Indus valley or the modern province of Sind is low but sharply defined between the Kirthars and the Thar. The province of Sind as a whole has a number of physiographic units (Pithawa 1936, 1959): western highlands - Kirthars and Kohistan, lower Indus valley - western valley section, eastern valley section, and the delta, desert - Pat and Thar. Within the average altitude of about 5200 ft (1524 m) and rising in places to a height of about 7000 ft (2133.6 m), the Kirthars, a part of the Indian continental mountain system, have a high relief (except in the south where it is linked to the Pat hills) and are marked by a number of transverse ridges which run down its eastern flank into the valley below and whose transverse lines of drainage act as pathways from Sind into adjacent Baluchistan. An offshoot of the Kirthars, known as the Lakkha range, extends eastward in the direction of Karachi. There are a few insignificant hills in the area intersecting the Indus valley and among them may be mentioned the Gano hills (with an elevation of about 30 m) on which the famous capital of Hyderabad stands, and the hills of Sukkur and Rohri. To the east of the Kirthars is Kohistan or 'mountain country' reaching as far south as the sea. In between its low, often parallel ridges are numerous flat plains with a number of thermal springs and rivers, the most important of which join the sea near Karachi. Kohistan continues up to the Manchar, a huge freshwater deposit connected with the Indus by the reversible flow of the Aral. Beyond it, flanked by the Kirthars on the north and west and by the Indus on the east, lies the eastern valley section of the western valley section whose main watercourses besides the Indus is the western Nara, possibly an old course of the Indus but now flowing into the Manchar. The eastern valley section lies between the Indus and the eastern Nara which following the Indus is envisaged to be a living river joining the Indus and

flowing as a combined stream into the Rann of Kutch. Of recent growth the Indus delta is an inhospitable stretch of mudbanks, sand dunes, swamps or lagoons while among the desert areas, Pat lies between Suk and Jacobabad in the north (i.e. the Kachhi plain), and Thar abuts the eastern Nara and the delta on the east.

In his map of the distribution of Harappan sites in 1968 Wheeler (1968: 4) shows about 20 sites in Sind, a number which may not be exhaustive (see Lambrick 1964: note 2). In fact, many of these sites, as by Wheeler seem to be in the lower Indus basin itself: 'the number of sites in the lower Indus basin increases from 3 during the Amri Kot Diji phase to 20 during the Harappan phase' (Flam 1981: 55). Flam's map (1981: 57) shows at least 13 Harappan sites in the interfluvium between the Indus ('Sindh Nadi') and the eastern Nara ('Nara Nadi'). This makes sense. A large part of the belt of land between the Indus and the Nara (i.e. the Eastern Nara) the doab, 70-80 miles wide, is very fertile. The types of soil found in the Western Valley section are also found in this portion of the basin' (Pithawala 1936: 304). Secondly, the location of sites in this area which is supposed to have been thoroughly disturbed by shifting river courses (Lambrick 1964: the map facing p. 36, suggesting some probable ancient courses of the Indus) suggests that ideas regarding the frequency of changes in the Indus river course may be exaggerated.

Heat and aridity are well known climatic features of Sind ('no other part of India has so long a continuance of excessively hot weather, owing to the deficiency of rain': IGI 22: 303) with summer temperatures shooting up to 120°F and average annual rainfall limited to 8 inches. However, this fact does not support by itself Marshall's hypothesis of a wetter protohistoric climate in Sind on the basis of the prevalence of baked bricks at Mohenjodaro, the extensive drainage system and the representation of a fauna preferring humid climate on her seals (cf. rhinoceros, tiger, elephant and buffalo). Modern scientific research also is not conclusive on this point (for Marshall's opinion, see Marshall 1931: 2-5, for a more recent opinion, see the section on 'weather systems in prehistoric climate' in Kenoyer 1991, for an endorsement of the idea of climatic change, see D.P. Agrawal 1992, which will be discussed later). But one point can safely be assumed: biotic interference must have led to a general lessening of the rainfall since then. Even in the early part of the century there were rich forests of principally *babul* (*acacia arabica*) skirting the reaches of the river for miles together, and the alluvial soil

which borders either bank of the Indus for a distance of 12 miles is considered superior to every other part of Sind in soil and productiveness.

The Larkana area of Sind, where Mohenjodaro is located, was described by J. P. Flender (1965) as 'perhaps the finest tract in the whole of the province' (IGI 16: 14) which yielded, even before the advent of modern irrigation, three crops a year. It was one of the most important grain marts of Sind, producing the finest rice in the province along with wheat, largely on the river banks.

Certainties of inundation have reduced Mohenjodaro to what it is today: a sprawling mass of weather-bitten mounds which on the site-plan tend to form a pattern showing a higher western mound and a lower but larger eastern mound with a marked depression in between. Michael Jansen (1987: 252, note 2) puts the visible urban space at 95 ha (234.74 acres). The precise limits of the ancient periphery are hardly established. Marshall (1931: 9) wrote that earthen sherds might be picked up for about half a mile on the east and to a lesser extent on the west and south, but this doubtless extended area was within the city proper and did not constitute its extra-urban suburbs. Jansen (1987) provides a very important piece of information: 'archaeological remains seem to continue for at least 1 km. at least to the east of the site. Their uppermost surface level is at the present surface of the plain at a slightly varying height of 4.6-6.1 m. a.s.l. They represent the (Late?) urban phase. Some tests east of the B. S. tower, posts for some distance. The total built-up area of the site can be more than 200 ha. or about 500 acres. The point is that the area covered by Marshall that Mohenjodaro covered 240-50 acres and the loss of the site is not great. As early as in 1965 J.P. Flender (1965: 14) wrote that Mohenjodaro covered an area at least twice the area of the city proper. Mortimer Wheeler (1968: 26) estimated the city to be the size of or 'upwards of three miles in circuit', citing Marshall as the authority. The city was now lost, but three miles to the east of the site. There is no evidence that it once flowed close by. R.D. Banerjee (1961: 18) suggested that the depression between the western and eastern mounds might be an ancient river bed or a part of the city's drainage system. This hypothesis was considered probable by Ernest H. Marshall (1931: 8) called the depression 'the most

important thoroughfare of the city'. In 1965 (Dales 1965: 148) Dales accepted the possibility that it was originally a canal or a branch of the river. However, Jansen (1991) has conclusively shown that there was nothing in this open space.

Before discussing the general morphological features of Mohenjodaro a few current issues regarding the history of this settlement must be made clear. Our understanding of these issues has been to some extent impaired by the early excavators' preference to record all excavated objects including structures in relation to a fixed bench-level on the top of the mound (for a criticism of the method, see Wheeler 1947: 144-7, for a vindication of the early stratigraphic reconstruction of Mohenjodaro, see Lambrick 1971). However, the early excavators of the site had been eminently successful in doing what they had tried to do, i.e. reveal the total patterns—morphological and otherwise—of the long-buried Indus civilization (for a similar observation, see Wheeler 1950). As the state-publication of many modern 'scientific' excavators is not beyond reproach, it is this total pattern reconstructed by the early excavators which still demands primary attention.

What is the sequence of the Indus civilization site of Mohenjodaro and how was it constructed? The answers to these two questions are interlinked. One may begin with the current estimate of the level of the original floodplain of Mohenjodaro. Today it is about 48 m 'above near sea level' (a m s l.), with the following a m s l. heights for some major points of the ancient city: average height of the lower city—52-3 m, the level of the Great Bath on the citadel—54-5 m, the highest points of the citadel—59-60 m. The estimate of the level of the original floodplain on which Mohenjodaro stood varies from Jansen's 41 m to Marshall's 33 m (Jansen 1987). In this context Jansen argues that these probable levels of the original floodplain do not suggest that the city was subjected to heavy floods during its occupation. Jansen (1987) further observes that 'the sedimental material identified within the architecture as 'flood deposits' is not in primary but in secondary position'. So the issue of floods at Mohenjodaro seems to have lost its relevance now. Secondly, the stratification which was proposed earlier for Mohenjodaro (Marshall 1931, Mackay 1938: xiv-xv) postulated the existence of seven successive cities, with the provision for two more cities below the level up to which the digging could be conducted. Early III, Intermediate I, II, III and IIa, Ia, Ib, II and III. Although the idea of seven or more cities laid horizontally in succession is discarded now, there is yet no clear alternative framework to understand the history of Mohenjodaro. A revised stratification, due

by the P.K. Garg, is being prepared by Jansen. I now come to two further points in this context. First, as Jansen (1987) argues, there is no evidence at all of the existence of an early Harappan level at Mohenjodaro. In fact, if it is proved earlier, the existence of a Kot Diji-related early Harappan level on the Indus floodplain proper is rather improbable. Secondly, it has been suggested that the finds of cultural remains deep down in different horizons in the perimeter of the city do not necessarily imply that there were regular settlements much lower than the level reached by the excavations. As Jansen (1987: 13) argues:

It would take the amount of clay and sediments for the construction of two platforms, one for the 'citadel' and one for the 'lower town', based on an average of 1.5 m³ per m² to receive a figure of about 4 million cubic metres (about 400,000 tons) of material to the citadel, without counting the millions of bricks. The pits dug for the water were most probably located close to the platform, and might have been used to store them. This amount taken into consideration, both platforms could have easily have been surrounded by a ditch at least 5 metres deep and more than 10 metres wide which once filled with water became a sort of moat and together with the platform served as fortification similar to the early historical sites of the Ganges plain. This would explain why no one has ever found a ditch, a well, and also why pottery fragments and brick pieces were found deep down in the soil. They would represent a secondary position, rubbish which was thrown into the ditch.

More work will obviously be needed but this explanation offered by Jansen makes sense, especially because it is known that the structures of Mohenjodaro stood on mud-mudbrick platforms.

More solid evidence that Mohenjodaro was planned as a gridiron settlement with streets running north-south and east-west, dividing the city into blocks of roughly equal size and approximately rectangular, 80 m east to west and 1200 ft north to south (Piggott 1950: 165) is to be found now because, for one thing, the space between the citadel and the lower town has been found devoid of structures and secondly, there is a clear trend in the orientation of streets in the lower town. As in his research which has brought about this change in understanding

of the city, the north-south thoroughfare (First Street) there are indications of a second one, both the distance (180 m) from the First Street. No east-west thoroughfare has as yet been found. It has been argued that

the main system of streets in Mohenjodaro was north-south, with the main east-west thoroughfare, like the Great

Bath a single major orientation system with a dependent subsidiary or *log* system was not followed, but that the orientation was based rather on independent systems not necessarily coinciding at right angles. This may indicate a north-south orientation by a star and an east-west orientation by the sun, thus following the cosmic principle of day and night. Besides the observations on orientation there are several other indications that suggest that Mohenjodaro (and probably the other Harappan cities as well) was a city planned according to a highly sophisticated planning concept most probably based on cosmological principles. If this was so, who were these city planners who worked out, developed and executed this planning concept?

Recent discoveries at Mohenjodaro may go some way towards providing answers to these and other questions. We now know that at least the 'citadel' was constructed on a gigantic man-made platform measuring approximately 400 x 200 m and attaining a final height of approximately 7 m after twice being further enlarged. The platform consisted of a mudbrick retaining wall over 6 m thick, enclosing an inner filling composed of sedimentary material (including sand and silt) from the surrounding plain. The material for the mudbricks must have come from pits dug nearby which gradually filled up with water and were used as rubbish dumps. Using this platform as foundation, further platforms were built on top in order to elevate structures of special significance such as those now lying beneath the Buddhist remains, including the 'granary', Great Bath and the 'assembly hall'. All these monumental structures rest on huge natural substructures which in turn are built on the foundation platform of the 'citadel'. Some of the buildings, such as the Great Bath, were surrounded by walls both inside and outside. The highest raised buildings must have stood more than 20 m above the surrounding plain and were visible from afar. Similar elevations were also observed in some parts of the 'Lower City' even house units and small raised platforms generally associated with bathrooms (Jansen 1999, 77-8).

It has been necessary to cite Jansen in such detail because in recent years he has been the most serious student of the manifold aspects of the site of Mohenjodaro, and his ideas in this regard deserve careful consideration. In the context of his idea that cosmological principles were involved in the planning of Mohenjodaro and possibly other Harappan cities, all that one can say is that its proof will depend on whether or not ancient Indian cosmological texts contain descriptions of, or allusions to, such planning.

I. The Basic Structural Evidence

The five volumes of excavation reports published in the thirties (Mackay 1931, Mackay 1938) are still the primary source, although some important supplementary details have emerged from the works of Wheeler

and Dales (1965). Jansen's work is aimed primarily at the re-examination of the already excavated remains. According to him (Jansen 1979: 405) the plans published by Marshall and Mackay 'are partly incorrect or at least not quite comprehensible. The technique of cross-section was unknown at that time, and prospects of walls were not documented scientifically. Besides these problems, the specific location of artifacts had not been accurately reported'. This criticism by Jansen notwithstanding, the basic image of the city has not significantly changed since the early days of excavations at the site.

II. The Western Mound

Excavated first under Marshall and Mackay the western mound or the 'citadel' was brought into sharper focus by Wheeler in 1950. The mound is roughly parallelogrammatic in shape and slopes from about 40 ft (12.192 m) to about 20 ft (6.095 m). The highest point lies at the northeast corner where it is surrounded by a Buddhist stupa of the early centuries AD (Verardi 1987). In 1950 Wheeler (1950: 39, fig. 7) showed that around the western complex as a whole there was a mudbrick circuit wall with traces of salients on the southeast and west. Besides, there was a mud and mudbrick artificial platform all over the area. In the stupa area, i.e. at the northeast corner of the site, Marshall found definite traces of this platform. The intervening space between his 6th and 7th strata was 'occupied almost entirely by crude brick or alluvial mud heaped up artificially as to form an immense platform over the whole of the stupa area as well as over a big expanse of ground to the north' (Marshall 1931, 1: 125). Dating from the 'optimum phase of the city's development' (Wheeler 1950: 39) over the 'intermediate' period of the early excavators, this platform was contemporary with the buildings on its top.

On the southeast the earliest of the towers along the circuit-wall which was contemporary with the platform stood on a burnt-brick foundation. It was reinforced by horizontal timber work, the slots of which still

remain. In 1931 Marshall laid three trenches inside the courtyard, one of which was 40 ft deep from beneath the Buddhist pavement.

In making these deep cuttings was to lay bare the succession of strata from the top to the bottom of the mound. It is clear that this was a most conspicuous feature on the site, and it is likely to have been the evidence of the ancient city's foundation. In view of this, the Great Bath and other important structures on the west I

and that may have supplied the necessary water. The general massing of the entire construction is careful. The bricks are set on edge and covered with gypsum mortar. To make the bath watertight, a thin layer of plaster is applied around the outer wall. This wall itself lies within an enclosing surrounding wall and the intervening space between the two is filled with mud.

Marshall constantly describes this bath complex as a 'hydropathic establishment' (Marshall 1931, p. 24). The term 'hydropathy' carries the sense of the treatment of a disease by water, and thus the description is perhaps inappropriate. D. D. Kosambi has suggested that this might be a ceremonial *Pushkar* or the ritual tank of a Hindu temple.

This curious building, situated apart from the city on the citadel edge, might have been expanded to fill the tank with water. There is no imagery or decoration of any sort but the tank is surrounded by rooms which may have been used by living representatives, companions or servants of the goddess, the *apsaras* of the day; the water need not have been so laboriously drawn unless for water deities to whom it was essential. The range of seemingly unconnected meanings of the word *Pushkara* is highly suggestive: the root *Push* from which it is derived has the very close *Pushkala* denotes fertility, nourishment, plenty. One may go further than that one of the holiest of places of pilgrimage is a *tirtha* named *Pushkara* identified with one of that name in Rajasthan, but presumably representing earlier artificial tanks of the sort. The *Pushkar* is a necessary adjunct to a Hindu temple not actually by a river, even in well-watered regions (Kosambi 1962, 71-2).

Jansen (1989) points out that the Great Bath stands on older foundations, has a street (up to 5 m wide) on all sides and may be 'the only known single freestanding structure in Mohenjodaro which could be used as a tank around outside'.

To the immediate southwest of the Great Bath Marshall excavated a few rectangular blocks of masonry, some with vertical chases and others by criss-cross passages running between them. He suggested that they were remnants of a *hanuman* or hot air bath (Marshall 1931, p. 26). J. H. Wheeler worked on the complex and inferred it to be the podium of a granary. The rectangular blocks which are twenty-seven in number measure in total 150 ft (45.72 m) from east to west and 75 ft (22.86 m) from north to south. To the north, integral with the main complex, is a brick loading platform with an access at its eastern end. The podium's massive battered outer wall held a wooden superstructure with vertical chases and criss-cross passages might be for wooden timbers for the circulation of air, respectively. It has been argued that the podium

was veneered by a 5 inch timbering, the decay of which led to local collapses and subsequent patches of brick work (Wheeler 1968: 43). The construction of its original form antedates the Great Bath as its corbelled structure extends across the eastern end of the loading platform.

M. A. J. Feeney (1984) points out that there is no clear explanation of how the suggested wooden superstructure was fitted into the main brick structure. If the timber fitted into postholes in the ground surrounding the base of the walls, or sockets were provided in the brickwork itself, since the latter is not clearly proof of a timber superstructure should have been sought at the foundation level. Since there is no actual evidence for this type of superstructure, one can suggest that there was no space for grain storage (Feeney 1984: 93).

Across the street (11 ft 3.35 m wide) to the south of the Bath is a massive battered wall of the 'Intermediate' period, the purpose of which is uncertain. Associated with it is a cluster of disjointed walls, both of the Intermediate and Late periods.

To the south of the stupa area there are eight blocks of houses, marked off from one another by streets and lanes. The street at the northwest corner is about 14 ft (4.26 m) high. Nothing seems to be of particular significance here except the usual assemblage of bathrooms, walls and drains.

To the south of the stupa area and separated from it by a distance of about 9 ft (2.8 m), the L area exposes eleven blocks of houses. Among them there is at least one particularly interesting building.

The walls of different periods are mixed up together on the site, but it is clear that in the Late phase of the city site this area was not a material standstill and became congested. The spaces which were once open were partitioned off and that too rather poorly. Other parts of the site show a cluster of buildings and a few exposed streets and courtyards which attract particular attention.

To the east of the northern part of this area, however, is an important structure, the 'Buddhist Stupa'. This has twenty rectangular brick piers arranged in a square, which divide the building from east to west and north to south. Unpaved steps of about 3.5 ft (1.06 m) run along the sides and their purpose is probably to hold raised benches. The 'Buddhist Stupa' at Kanheri, a Buddhist rock-cut cave temple (Marshall 1931: 23) conceives this to be a place for monks to sit in meditation. More recently, the view that it was intended for a series of permanent stalls along the aisles (Wheeler 1948: 45).

III. The Eastern Mound

Till 1964–65 there was almost no evidence to suggest that the eastern group of mounds, like its western counterpart, was surrounded by a wall. Marshall (1931, i: 9) pointed out that the surrounding wall, if any, stood on the level of the contemporary plain and must have gone under subsoil water since then. On the western edge of the mound in the 1930s Mackay (1938, i: 5) found a portion of a very thick wall (about 9.14 m thick) and also a 'fortress-like structure' with a 'ghat-like' staircase case outside, but this find was not something on the basis of which a generalization could be made. Dales' find in 1964–65 was that of a 'massive construction composed mainly of huge solid mudbrick embankments with baked brick retaining walls' at the mound.

IV. HR Area

This area occupies roughly the southwest corner of the eastern mound. Outside the western edge of the HR where the mudbrick embankments and their burnt brick retaining walls were discovered, Dales' excavations on the top of the mound ran through a squatter type of occupation on the top and the remains of the Late and Intermediate periods below. The bottom was not reached because of subsoil water. More detailed evidence comes from the early excavations.

A north-south street, 30–5 ft (9.14–10.66 m) wide and designated as First Street in the reports, divides the entire excavated area in this sector into two. There are two cess-pits in the entire excavated area in this sector with a brick-drain between them to carry off surplus water from the northern to the southern pit which is provided with a series of brick steps on one side, so that a man could climb down when necessary to clear away the solid sediment' (Marshall 1931, i: 188). There are also burnt brick drains along both sides of this street.

The houses in the eastern sector are arranged around three lanes. Two of these—the 'High Lane' and the 'Deadman Lane'—open out from First Street and then take a turn to the south. On the western side at the junction with the 'South Lane' there is a brick built enclosure 32 ft (9.75 m) by 4 ft (1.21 m), presumably a just bin. The South Lane runs east but takes a slight bend to the south at its eastern excavated end. In the Late phase of the city, the Deadman Lane went out of use and the structures built over it.

The houses in this eastern sector of the HR area belong to the I

period, though there are traces of Late wallings. In some cases, the remains of staircases suggest more than one storey.

The main focus of the houses is in most cases a courtyard either fully or partly covered with only a light matting of thatch and reed. The rooms, either four or depending on the size of the house, crowd around this courtyard. Well paved bathrooms, connecting drains, wells and occasional wells are among the other distinctive features.

One of the houses in this sector, which has been designated as House 1, attracted the attention of both Mackay (Marshall 1931, i: 176–8) and Wheeler (1968, 52–3). It is bounded on the north by South Lane and on the west by Deadman Lane. The basic plan shows a large structure 32 ft by 40 ft or 9.75 m by 12.19 m with more than 4 ft (1.21 m) thick walls, access to which was provided by two stairs on the south. This was approached by a 'monumental double gateway' between two irregular blocks of buildings. A ring of brickwork (4 ft/1.21 m internal diameter) in the inner courtyard is taken to indicate a protective enclosure around a sacred tree. A 6.9 ins (0.17 m) high bearded human head in white limestone was found inside a room adjacent to the gateway, and a seated/quatting human figure (16.5 ins/0.41 m high) with his hands resting on his knees was found in broken pieces in the vicinity. The arrangement of the stairs, the double gateway and the thick outer walls do not suggest any domestic or industrial functions for this building, and the discovery of two conic specimens in the precincts led Wheeler to argue that the structure could represent a temple. Jansen (1985) offers a detailed analysis of the plan, stratigraphy and finds related to this house and supports Wheeler's inference.

Ten streets roughly parallel to the First Street and ten adjoining alleys cross the western section of the HR area. These streets and lanes do not vary much in width. A reference to Streets 2 and 3 on the plan shows that the variation is sometimes considerable. The lanes turn right at their corners are right-angled. The groups of houses vary in size, some blocks, especially Blocks 2 and 5, being smaller than the rest. Block 2 was perhaps one building, later divided into three units. In the north-western corner of Block 5 a house interpreted by Mackay (in Marshall 1931, i: 204) to be 'of exceptional character, probably sacred'. The walls are up to 4.5 ft (1.37 m) thick and the height 18 ft (5.49 m) enclosing solid mudbrick. These are likely to constitute the foundation walls of a superstructure.

To the west of this is a double row of sixteen houses having in each case 'a single room in front with one or two smaller rooms at the back'. Some had a paved bath corner with a drain or a narrow passage at one end. These have been interpreted as shops or retainers' quarters by Marshall (in Marshall 1931, i: 204) and as 'coolie-lines' by Piggott (1956, 162).

V. VS Area

The VS area lies across a broad depression to the north of the HK area. This depression was surmised by Marshall (1931, i: 214) to represent 'one of the principle streets of the ancient city'. However, the existence of such an east-west thoroughfare has not yet been found. At its eastern limit the VS area is crossed by the First Street which continues from the HK area.

A small part lies to the east (Section B) but the main part (Section A) lies to the west. Besides the First Street there are five lanes in this area and a number of narrow alleys. The lanes are often tortuous and seldom uniform in width. Section A or the western section has seven blocks, thirty-eight buildings. There are only two blocks or three buildings in the eastern sector of Section B. The buildings vary in size but the usual arrangement of courtyards, bathrooms, wells, drains, flights of steps, etc., does not differ. The individual features, however, are not necessarily the same. House I in Block I is 144 ft (43.88 m) from east to west and is much larger than the average private dwellings. House VIII in the same block is a rectangular structure (195 ft by 32 ft or 59.44 m by 9.75 m). A walled room in this house possesses a well which is connected by a drain with a street drain outside. House II (86 ft 5 ins or 26.46 m by 19.62 m) has in one of its rooms overlooking First Street, 'five conical pits or basins in the floor and lined with wedge-shaped bricks, apparently made from the pointed bases of large jars'. A flight of steps connects the room with the street outside and in one corner there is a narrow well. The rooms with which it is connected are paved neatly with bricks on edge. This could be a sweetmeat shop or a place to keep dyeing vats.

VI. DK Area

The DK area has five sections or excavated parts in all. Of these Sections A, B and C occupy the eastern edge of the mound while E and G are to the north.

Section A has about four blocks divided by a street with a drain on each side. There are about twenty-seven chambers in the area. The north

corner of its location on a higher ground than the rest, thick-layers of bricks, is supposed to be a shrine. Section E is interesting as almost all of it shows a very high standard of work. Architecturally it has nothing to recommend, except that it is badly built.

Section F is in the queerest position, some on edge, others showing a great deterioration that had taken place in the art of building during the intervening period, the difference in style of the two periods is very clearly seen (Marshall 1931, i: 236).

There are four blocks in this area. A wide street separates Block 1 at the extreme south from the rest. Block 2 is apparently made up of two or more blocks separated by a drain which probably once lay below an area of 2.13 m wide street skirts Block 3 on its east side. Block 4 does not seem to have anything distinctive.

Section C or the wide area has sixteen blocks. The most important feature of the northern portion of this area is a wide street (29 ft or 8.84 m wide) running from east to west and provided with drains and drains. To the south of this street are four blocks, divided into two by a drain with a drain opening out from the main street itself. Opposite its northern end in the main street is a soakpit. The earlier walls were built up with mud to support the late buildings. Block 3 is a large building which has been supposed by Mackay (in Mackay 1938, i: 244) to be a temple.

Block 4 is a separate cluster. A rather badly aligned street runs from Block 10 on the south. Two narrow lanes, both with drains, run with the wide street on the north. At the extreme north end of Block 12 by another lane which is 5 ft wide. A drain also issues from its eastern end. The remains consist of a series of steps of walling.

Block 5 or Section G covers a considerable stretch of ground along the western edge of the eastern group of mounds. The First Street continues along the eastern limit of the excavated area and bifurcates into two. Mackay (1938, i: 32) believes that this was the main entrance to the city from the north-west, perhaps overlooking the river and the sea. The First Street was the First Street and meeting the Central Street the latter turns northwest is another street ('West Street') cutting across the area from north to south. A line runs parallel to the West Street from its western end to its northern

What has been revealed by excavations in this area belongs essentially to the Late period.

To the west of this West Street is a cluster of blocks comprising numbers 13–17 and 29. That a marked deterioration took place in the planning during the Late phase of the city is clear from the irregular alignment of the lane between the Blocks 14 and 15. The lane (3.11 or 1.16 m wide) was properly aligned in the north, gradually becoming wider and irregular towards the south.

Of the two houses in Block 29, only one is complete, the other one is completely destroyed. Block 13 has two houses but neither of them is well-preserved or interesting. Block 14 is relatively compact and has a number of houses, one of which at least (Room 18, House III) possesses a privy. Between the badly aligned lane on the west and the West Street on the east is a long row of fragmentary houses denoting Block 15. Its northern limit was marked by an alley 4 ft 8 ins (1.42 m) wide. This alley formed the northern end of Block 16 also. It is damaged and is said to have three houses.

Of Block 17 to the north of that alley, Building 4 deserves special mention. Apart from its annexe, this is 48 ft 6 ins (14.78 m) long (from south) and 23 ft 4 ins (7.11 m) wide (east-west). A remarkably steep stairway (3 ft 6 ins or 1.06 m wide) with very narrow treads (1 ins or 0.025 m high and 7 ins or 0.17 m broad) leads upward from one of its rooms at the base. According to Mackay, 'this stairway would have been most awkward for domestic purposes and it strongly suggests the ascent to a watch-tower' (Mackay 1938, i: 147). Mackay also thinks that the original structure must have been 'a watch-tower which in such a situation would have commanded the down-river approach to the city as well as two of its main entrances, namely the gateway of First and Central Streets' (Mackay 1938, i: 148).

Block 18 to the east of the West Street is massive. It includes possibly Block 19 also in the north and the entire structure erected on an artificial platform is thus 242 ft 6 ins (73.91 m) long. Of the remaining blocks in this area (Blocks 20–8) Block 20 is built on mudbrick foundations. The massive battered outer walls of Block 11 again indicate us to the past. Little remains of the rest.

At least five lanes ('Low', 'Loop', 'Fare', 'Crooked' and 'L' shaped) cut across the area which has been called the DK area, Section 1. Among them, only Low Lane is roughly parallel with First Street, the others following a zig-zag course. Mackay (1938, i: 25) thinks that

besides First Street there was another street, surely as wide as, if not wider than Central Street with which it should be parallel.

It is in this area that an attempt was made to work out the architectural development of the numerous buildings from the Intermediate III period, but it never that might mean. Deep digging showed that there was no break in architectural continuity. It was also quite impossible to determine the use of the buildings from the nature of antiquities found in them. Of its twelve blocks with subdivisions not all deserve notice, most of them being a class of ordinary dwelling houses.

Mackay has been given by Mackay (1938, i: 46) on what he thinks was the palace of a prince or governor. There is nothing except its size (about 180 ft by 70 ft or 54.86 m by 21.33 m) which marks it apart from the usual run of houses at Mohenjodaro, although it must be admitted that this size is not altogether uncommon. Kosambi (1956: 56) believes that it was 'merely a merchant's house—only a little larger than the other merchants' houses which surround it'. The essential features of its plan are two courtyards separated by a wide passage with a double door and no door on either side. The entrances were from the north and south. The complex of rooms suggests diverse functions.

Block 8A also suggests something out of the ordinary. There is an L-shaped structure with buttresses at intervals along the walls which probably carried roof beams or was an open gallery giving access to the rooms around it. According to Mackay (1938, i: 92) this was a hostel for pilgrims. In any case this does not seem to be a common building.

Curiously enough, Mackay (1938, i: 119) calls one particular house 'a place of rest for the caravans coming into the city'. The lower floor does not contain many rooms but at the immediate entrance a stair leads upwards. Even in a modern khirki it is the upper floor which is important as the sleeping apartments, and if one accepts Mackay's argument that the river-side gateway of the city was nearby, the place may have been used as a caravan serai. As elsewhere in Mohenjodaro, this structure had been damaged considerably during the Late phase of the city.

The excavations in this area were principally by Q.M. Monier in 1933–34 and located in the west of the VS area has been described by Jansen (1984). The substantial remains excavated were numbered

according to blocks which comprised clusters of detached houses along with a number of streets. One such street is on the east-west and is about 2 m wide. This has been traced for 66 m. The excavated area is dominated by a house complex which covers about 890 sq. m and has walls about 2 m thick. Jansen (1984) has broken this complex 'structurally into 6 zones according to their relation to the interior system of intercommunicating access routes'.

Chanhudaro

The site of Chanhudaro was discovered by Majumdar (1934: 35-44) and more elaborately excavated by Mackay (1943), although not up to virgin soil because of the presence of subsoil water. It is now about 12 m (19.30 km) away from the left bank of the Indus, but it stood on a near the river bank. Mackay (1943: v) points out that about 37 m (59.53 km) away there is a gap across the Kirthars, which is still frequented by caravans. This geographical element might have given the site an added importance. The site itself, which was once a complete whole, is now a cluster of three mounds, marked I, II and III and 95 ft (289.56 m), 1060 ft (323.08 m) and 450 ft (137.16 m), respectively. But Majumdar and Mackay concentrated on Mound II which showed the Harappan and two later occupational phases. The scheme of cultural succession at the site from the bottom upwards, as enumerated by Mackay, is: Harappa III, II, I; Jhukar and Jhangar. Piggot (1950: 222) reclassified them as: Chanhudaro Ia, Ib, Ic (Harappa culture), Chanhudaro II (Jhukar culture) and Chanhudaro III (Jhangar culture). The three Harappan phases at Mound II are separated by two debris layers and have no structural relationship whatsoever.

What one gets in Harappa III of Mackay in Mound II is essentially a few chambers and fragmentary walls. Mackay sums them up by saying that these 'represent three, if not four separate houses, all of them small but evidently the houses of fairly well-to-do people' (Mackay 1943: 15). The upper part of a mudbrick platform, about 13.5 ft (4.08 m) high, is traced above flood-level.

The remains of the succeeding phase (Harappa II) are more elaborate. A street runs from northwest to southeast with a width of 15 ft (4.57 m). Two covered drains run on either side of it. Another street crosses the main street at right angles while yet another opens up to the west from its southwestern end. Parallel to it is a lane, roughly 3 ft 10 ins (1.17 m) wide. The most important excavated structure in the main street is what Mackay (1943: 41) calls a bead factory with a furnace, lying on its eastern

The principal part of the building is 33 ft (10.05 m) long and 13 ft 6 ins (4.11 m) wide. The direct entrance from the street is into a small chamber No. 215 in Mackay's Plan IV. In an adjacent room to its north is a courtyard which is compartmented by thin brick walls and has a criss-cross of flues underneath. The abundance of finished and unfinished bricks in the building suggests that the wall with flues was meant for drying them but the absence of ash, etc. indicates that it may never have been used. The other buildings of this level do not seem to be of any great significance. A noteworthy feature is a number of solid mud-brick pillars, the upper portions of which have been exposed and which evidently raised the houses above flood-level.

The occupational level of Harappa I is too denuded to suggest an intelligible plan. At the edge of Mound II was discovered a long (traced for about 80 ft or 24.38 m) and wide (4 ft 9 ins (1.44 m) 5 ft 4.5 ins (1.63 m)) wall which took a right angled turn to the west at its eastern end. The fact that the interior face of the wall was rough showed that the structure in mind had revetted an internal platform such as that which is found at Mohenjo-daro at Harappa. The scale and excellence of the work indicates an important structure worthy of further exploration. (Wheeler 1958: 57)

Just south-west of Mound II's Mound I the remains of which suggest a platform and a wall with effective drains and a eastern access path. The platform has been partially exposed but some of them are of substantial dimensions.

The Mound I (Majumdar 1934: 89-91) seems to have been an extensive platform of the two mounds covering an area of 1100 ft (335.30 m) by 1060 ft (304.8 m). Majumdar traced a 'long rampart wall of mud-brick and stone blocks' for 170 ft (51.865 m) on the southeast and for 110 ft (33.53 m) on the north and east also. To the south there is a small opening in the wall but whether or not that is an opening for a gate is not clear. On the inner side of the wall or the enclosure there are several small pits which have been excavated but there are 'visible traces of innumerable pits' and at least one well.

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2–3.5 ft (4.41 m by 3.50 m). 'A well-regulated town-plan' has been introduced on the basis of a lane and 'a spacious street running from north to south between two blocks of houses'.

Ahmadnagar

The mound of Ahmadnagar (Fairservis 1982), with a diameter of about 100 m, is near the junction of the Malir river and its tributary. It is a Harappan culture site and contains at its central and highest part, an open circle (20 by 8 m) with a stone-built well (roughly 60 cm by 90 cm) which has a 'Harappan intersecting circle bath tub' attached to its southern side. The court is entered by passageways through surrounding buildings, one of which contains a stone-lined bathroom with covered drains and outlets. No enclosing wall could be traced around the site.

CHOLISTAN

The former princely state of Bahawalpur (IGI, vol. 1: 6, 1908, pp. 1–204) was divided lengthwise into three great strips. Of these the first is a part of the Great Indian Desert and is known as the Rohi or Cholistan. The central portion also is chiefly desert and resembles the Bar or Pothohar uplands of western Panjab. It is only along the Sutlej which flows past the town of Bahawalpur before combining with the flow of the Chenab that the tract of the area is fertile. Our concern here is with the course of the Hakra which separates the Cholistan desert from the central part of Bahawalpur. The Cholistan desert thus lies to the south and east of the Hakra depression. Following Flam, I outlined in the previous chapter the course of the Hakra lower down till it joins the Indus and flows into the sea in the vicinity of the Rann of Cutch. On the Indian side the river is known as the Ghaggar and is identified with Sarasvati of early literature. This distinct river retains some water in its upper course during the monsoon, but this does not extend beyond the modern town of Hanumangarh, mediated by Bhatner. Starting from the Panjab foothills it touches the plains near Ambala, flows past Thaneshwar, Karnal and Patiala, and enters Bahawalpur beyond Sirsa. It may be remembered that for a while in the upper reaches the Sarsuti (derived from Sarasvati) and Ghaggar are two separate rivers with a few minor streams in between, but this does not affect the identification. In Bikaner it continues along the small, *rehal* town of Hanumangarh, Suratgarh and Anupgarh, and then crosses over to enter the Bahawalpur as the Hakra. We have already seen how Flam has traced

the course of the Nara Nadi flowing into the Indus. The sea then was further north, with Kutch constituting perhaps an island (or islands) and the lower Indus basin. While the Ghaggar was alive it had a number of tributaries. The course of one of them, also known as the Panab into the Indus, is easily traceable and archaeologically important. It is Chautang or the Vedic Drishadvati joining the main river near Suratgarh.

The problem of the desiccation of the Ghaggar plain is interesting and has drawn considerable geographical attention. S. M. Ali (1941) points out that the Ghaggar has been a non-perennial river from historical times. He, however, does not believe in the hypothesis of a basic climatic change to account for this desiccation. 'The diminution of water in this river has been due to (1) direct causes, for instance (a) the diversion of a few of its feeders to the Jumna or the Sutlej, (b) canalization and increasing cultivation in the area, and (2) indirect causes as (a) deforestation and erosion in the hills in which lie the headwaters of the streams of the divide, (b) the erosion in the plains due to overcultivation and excessive pasture' (Ali 1941: 177). R. L. Rakes (1968) has postulated that the Ghaggar catchment has alternated between the Ganges and the Indus systems and its final eastward diversion to the Ganges in about AD 500 may have led to its death as a river.

The issue, however, is far from clear. It does not rest only with the problem of desiccation. Timing is equally important, at least from the archaeological point of view. The complicated nature of the issue may be traced back to the contradiction between Francfort's and P. Agrawal's hypotheses. According to Francfort (1962) when the prehistoric people of the Harappan segment of its course, no large perennial river could have existed for a long time. This contrasts with Agrawal's hypothesis that as far as the archaeological evidence is concerned, the Ghaggar-Hakra and Mature Harappan sites of the Ghaggar channel indicate that the river was alive during the period of Third and Second millennium BC (Agrawal 1967: 240). Basically the debate centres around the timing of the desiccation process. According to Francfort, it began by the Painted Gray Ware period whereas Agrawal believes it began much earlier. Incidentally, Agrawal's hypothesis is based on the fact that both the Sutlej and Ghaggar systems were alive at the same time. According to him, the present influence of the Ghaggar is not to be seen as an old feature. A distinct channel of the Sutlej flowed through the Nara directly into the Kutch. Regarding the Ghaggar system, Agrawal states

1. The ancient bed of the Ghaggar has an almost constant width of 6–8 km from Shatrana in Punjab to Marot in Pakistan.
2. There is a clear palaeochannel southeast of the river Markanda which is the ancient bed of the Ghaggar near Shatrana.
3. Another channel which corresponds to the present Chautang seems to be the Ghaggar near Suratgarh.
4. Near Anupgarh, the ancient Ghaggar bed seems to bifurcate and both channels come to an abrupt end. These two terminal channels of the Ghaggar seem to disappear into a depression near Marot. There is no indication of a palaeochannel connecting the ancient Ghaggar with the Indus or the other rivers.
5. The palaeochannels of the ancient Yamuna show that it changed its course in the past three times. The first channel flowed into the old bed of the Ghaggar, the second channel flowed through a channel which includes the present-day Chautang (ancient Drishadvati), and met the Ghaggar near Suratgarh. The third time it went southward and joined the Ganga through the Chambal.

To conclude, basically the Ghaggar is a descendant of the upper Sarasvati. Due to neotectonic upheavals, its two main tributaries—the palaeo-Satluj and the palaeo-Yamuna—were pirated by the Indus and the Ganga respectively, leaving the Sarasvati (the present-day Ghaggar) high and dry. This drying up of the major river of the Indo-Ganga divide had catastrophic consequences for the human settlements, as one can see by the sticking of the early man to the changing courses of these channels (Agrawal 1992: 240–1).

It must also be stressed that, according to Agrawal, 'the evidence of climatic change in Rajasthan is now incontrovertibly established and is supported by a variety of data, supplemented by the data from the Arabian sea' (Agrawal 1992: 243). Apart from G. Singh's pollen profile which shows a wet condition coinciding (4000–2000 BP) with the 'pre-Harappan and Harappan' presence, the salinity curve of the Didwana salt lake shows that 6000 to 4000 years ago the water in the lake varied from being moderately fresh water to moderately fresh water. There have been two brief phases in the past 4000 years. According to Agrawal this fits in with the evidence provided by the work on the Arabian sea which marks the Holocene (8000 years ago) as a period characterized by humid conditions. However, after this phase was over, there was a climatic regime with an apparently gradual lessening of rainfall.

Apart from the work of L.P. Tessitori (1919), the first serious archaeological investigation of the Ghaggar-Hakra basin was undertaken by Aurel Stein (1942). He explored along the Ghaggar from Hanumangarh in Bikaner to the lands below Derawar in Bahawalpur.

From below Derawar to Fort Marot his sketch map shows a cluster of mounds 'with prehistoric (chalcolithic) pottery'. From Fort Marot to some miles below Suratgarh are mounds 'with sherds decorated with impressed patterns'. The rest up to Hanumangarh is all shown to be prehistoric or earlier, meaning thereby an occupation phase within the early centuries. The number of prehistoric mounds on Stein's map is forty-two, and no Sandhanwala near the Bahawalpur-Bikaner border. Of these at least twelve according to his map, are Harappan. The cultural character of the second set of mounds is not known but he prefers to place them between the Harappan and historical periods.

The subsequent exploration by A. Ghosh (1952) considerably changed the picture on the Indian side of the border. The number of ancient sites discovered by him in the Bikaner portion of the Sarasvat-Drishadvati valley is about a hundred, of which twenty-five are Harappan. In Bahawalpur Henry Field (cited in *Pakistan Archaeology* 1: 35–6) recorded seven new sites which belong to the Harappan and Cemetery H categories.

In Cholistan or Bahawalpur the most important work is by Mughal but the details are still to be published. Out of a total of 414 sites discovered by him along 300 miles of the Hakra river bed 174 are mature Harappan ('Mohenjodaro and Harappa related'). Mughal observes:

The most striking aspects of the Mature Harappan Period in Cholistan are: ... an increase in the number ... size and height of settlement ... at least one ... Ganwerwala at 81.5 hectares (201,3865 ... the same size as Mohenjodaro, and a profusion of ... and their clear separation from habitation areas. However, ... residential and industrial functions ... also occur (Mughal 1992: 240–1).

Mughal's map clearly establishes the fact that towards the Indian side of the border, the distribution of the mature Harappan sites is ... and thus the mature Harappan sites in Rajasthan and ... be considered to belong to a separate distribution area. ... at the shift in the concentration of settlements from the ... part of Cholistan to the southeast was dictated by hydro- ... necessitating relocation of settlements on new grounds' (Mughal 1992). Elsewhere Mughal (1991) enumerates the size-categories of mature Harappan sites in this area: 0–5 ha./44 sites; 5–10 ha./10 sites; 10.1–20 ha./8 sites and over 80 ha./1 site.

WESTERN PUNJAB

Panjab or the upper Indus valley is literally 'the land of the five rivers'. The country enclosed and watered by the Jhelum, Chenab, Ravi, Beas and Sutlej. The 'daman-i-koh' or 'skirts of the hills', the Siwaliks and the Indus provide a more or less clear boundary line for the broad Panjab interfluvium except in the east where they seem to blend imperceptibly in the broader alluvium of the Ganges-Yamuna tract. The doabs are five: the Sindsagar between the Indus and the Jhelum, the Jhelum between the Jhelum and the Chenab, the Rechna between the Chenab and the Ravi, the Bari between the Ravi and the Sutlej and the Bist between the Sutlej and the Beas. Outside the Himalayan submontane topography, except that of the Aravalli outliers of the Kirana and Sanghar, is one of unrelieved monotony. West of the Ravi the country is arid and sandy, the central portion of the Sindsagar doab, the Thar, approaches true desert conditions. The aridity is also marked in the southwest where Panjab merges on the northeastern fringe of the Thar while it is less so on the Indo-Gangetic divide between the Sutlej and the Yamuna.

The geographical distribution of the Harappan civilization in western Punjab is not clear. Whether it is due to lack of intensive exploration or not, Harappa, the type site of civilization on the Ravi, seems to mark the westernmost limit here. In its immediate periphery there is only one other reported site—Chak Purvane Sval. Another site, Vaminal, has been discovered on the right bank of a dried up course of the Beas.

Harappa

The Ravi now flows about six miles to the north of the site (basic sources Vats, 1940; Wheeler 1947, for further excavations of the cemetery see Pakistan Archaeology 5, 1967: 63-8; for more recent work see Kenoyer 1989: 992; Kenoyer 1991a: 991b) which is situated at the confluence of the two dried up beds of this river, one of which clearly shows on the site map. Before the advent of modern irrigation the Ravi doubt on the western part of which Harappa lies was an inhospitable wasteland. The writer of the Montgomery district gazetteer in 1900 described it as a 'howling wilderness' (Fagan 1991: 3). It is likely to have been greener when Harappa was alive, but the subsequent recession is not known. Marjia Fentress (1982: 228) estimates a most of 600 square kilometres of immediate available land. Harappa thus precluding any necessity for dependence on a wider network of agricultural villages for its food needs. Shireen Raza (1982) argues that Harappa was more of a redistribution centre.

The fallacy of this argument has been pointed out by one of the leading economists of the world. The fallacy is that the city is not a homogeneous unit, but a collection of many different units, each with its own interests and needs. The city is not a single entity, but a collection of many different entities, each with its own interests and needs. The city is not a single entity, but a collection of many different entities, each with its own interests and needs.

Brick robbing by neighbouring villagers and contractors at the Multan railway reduced Harappa long ago to mere shambles.

The site plan of the most imposing mound is what is termed AB (see Fig. 1). It is 441.96 m by 800 ft (243.84 m). Its contour marks show a height of 40–50 ft (12.19–15.24 m) from the level of the surrounding plain. Between this and the dried up Ravi is the less high (20 ft/6.09 m) Mound D, 171 ft (295.65 m) by 98 ft (29.87 m) while to its south are Mounds DJ and H. As it is a cemetery Mound H should perhaps be excluded from the city limits. The area extends considerably to the east beyond the city limits. The area extends considerably to the east beyond the Mound B and a smaller one, Mound G, to its south. The modern city of Harappa also was within its periphery. The total circuit should be 1500 ft (457.18 m). Mackay (1948: 61) thought that Harappa was larger in extent than Mohenjo-daro, but this does not seem to be the case. Dales and Kenoyer (1989) have written on the basis of the surface surveys, test pits and some shallow borings made in 1987 and 1988 that the site is much larger than previously supposed. They put it at 150 ha (370.65 acres). Some of the suggestions for the contemporary or near contemporary environment include the soil scientists working with archaeologists in the area. 'The excavations are that the carbon isotope ratios of pedogenic carbonates in the portions of nodules forming at Harappa reflect an arid climate characterised by low soil respiration rate' (Dales and Kenoyer 1989: 150).

$$I \sim M_{\text{pl}}^2 \sqrt{B}$$

The striking feature of this mound is a fortification system around its base. The plan thus has roughly the shape of a parallelogram. Only the west side does it take a sharp inward bend for a while. The foundation of the defences is a mud and mudbrick 'bund' or 'band' laid over the alluvial soil and carried up to a height of 14 ft. Its purpose was to protect the site against floods. It also formed the base of the fence wall itself.

The wall is 4 ft 6 in. wide. In Wheeler's cutting (HP XXX), it is 12 ft 6 in. thick at the base while in another cutting (HP XLV) it is 5 ft 4 in. It is battered both externally and internally, the angle of battering between 13 and 21 degrees. On the outer face there is a brick revetment, also battered. Its thickness varies from 1 to 1 1/2 ft and phase to phase.

1. What is the purpose of the study?

guarded the inward bend of the wall on the west projects 23 ft (7.01 m) at its northwestern and 15 ft (4.57 m) at its southeastern ends. The same at the northwestern corner shows three phases of construction. Wheelers cuttings, HP XL, XLVI and XXXVIII, reveal three other salient features. In the north a marked inlet along the wall suggests an entrance but this is unexplored. In the west the evidence is more clear. The continuous line of defences is interrupted at this point by two lateral walls of mud brick and burnt brick and 'between the flanking walls a filling of mud, in one place a transverse mudbrick retaining wall, may be presumed to have carried the ramp or stair' (Wheeler 1947: 71).

The wall to the north of this entrance is fronted by terraces showing three constructional phases and is approached through outer gates. Seemingly these were not for normal needs of defence. Wheeler suggests that 'the plan was designed to conform with the needs of some sort of ceremony—religious or secular or both—in which the terrace or terraces played a dominant role and to which processional access was required' (Wheeler 1946: 74).

Behind the rampart and integral with it is a platform of mud and mud brick which is 33 ft (10.05 m) high and 'designed to carry the internal buildings of the citadel' (Wheeler 1947: 65). These buildings, however, are too ravaged to show any meaningful pattern. Both Vats and Wheeler noted that there were six structural phases (Vats 1940, i: 137–44). In recent excavations a well (1.2 m internal diameter) built of specially made wedge-shaped bricks has been found in the east-central portion of the mound.

II Mound F

On the river bank Mound F reveals three interesting structural complexes, all under the shadow of the high Mound AB.

One is the 'Great Granary'. It stood on the river bank and has a blocks (150 ft/45.72 m by 56 ft/17 m each), eastern and western walls 23 ft (7.01 m) wide open aisle in between. Each of the blocks is divided into a series of six halls (51 ft 9 ins/15.77 m by 17 ft 6 ins/5.33 m) separated by five corridors of similar length but narrower width. The timbering of the floors in each hall rested on three sleeper-like walls. The space underneath being meant for the circulation of air which flowed through air-holes at the end. These air-holes were later additions to facilitate the flow of air, after the ground level outside rose. The whole complex, southern and parts of the eastern and western sides stood on a high retaining wall. The absence of this in the north suggests that the approach

was from the north, i.e. the riverside. This also suggests the use of waterways for carrying grains to the granary.

The idea that the structure was a granary was first formulated by Vats (1940, i: 137–44) on the analogy of the granaries of Mesopotamia and in Vats (1940, i: 137–44) on the analogy of the granaries of Mesopotamia where too the air ducts formed a necessary feature to keep the grain from getting mildewed. There is another point which suggests the granary being a granary. The end portions (for a length of 2.13 m) of the sleeper walls in each hall were wider than the remaining portion. This implies that the superstructure along both ends was considerably heavier. A granary of this type was excavated in 1965–66 at Tel. Em Thalathat in Iraq (near Mosul) dated to the Nineveh V period (1960 B.C.) (Egami and Sono 1970). The existence of grain-pounding platforms in the vicinity of this structure does not leave much room for doubt (Fentress 1984) about its function as a granary. However, the earthenware vessels unearthed in the immediate vicinity of this granary are a fragmentary heap and do not add up to a significant pattern.

A few hundred feet to the south, however, there is a row of circular platforms which deserve notice. Vats unearthed seventeen such platforms and Wheeler added more. Almost all of them are equidistant from one another, the distance varying between 20–1 ft (6.09–6.4 m) from centre to centre. Each platform is 11 feet in diameter and consists of a single course of three concentric rings of bricks on edge masonry with an opening at the centre equal to the length of three bricks. The mortar used in the construction is of the same type as that of the platform (Vats 1940: 74). Vats was of the opinion that the platform was for drying grain but Wheeler noted that the platform was for drying grain but Wheeler noted that the platform was for drying grain but Wheeler noted that the platform was for drying grain.

The platform is a large platform and Mound AB there is an assembly of small houses grouped symmetrically along three east-west streets intersected by six narrower alleys at right angles. They stood on a high retaining wall, the traces of which still survive. The rows are arranged in such a way that the number of houses may have been more. Each house (51 ft 9 ins/15.77 m by 17 ft 6 ins/5.33 m) detached houses was accessed by a narrow passage to ensure privacy, and had about two rooms with brick-paved floors. At a higher level, near these houses, there were pear-shaped furnaces. Their major axis varied from 6 ft 2 ins/1.87 m in length. A crucible for melting metal is suggestive of their purpose.

The Harappan cemetery, Cemetery R37, lies to the south of

Mound AB. Mound E, the counterpart of the eastern mounds of Mohenjodaro, lies to the east and has been excavated only recently.

III Mound E

The excavations which have been conducted at the site since 1956 at Dales and Kenoyer have, apart from the cemetery area, concentrated on the excavations at Mound E, i.e. the mound overlain by the mature Harappa village. On the top of the northwestern corner of this mound were found intact architectural remains including small streets, drains and pits. On the slope of this sector of the mound a series of mudbrick platforms with burnt-brick retaining walls was found. A large as well as a small pottery kiln was also found associated with this level in this sector. The major burnt brick wall here is 2.5 m thick. A major north-south street is located on the southern slope of Mound E, with the evidence of a drain along its eastern edge. One of the houses was found built on a mudbrick platform in which there are three postholes indicating pillars for roof support. Perhaps the most important architectural discovery is indicated by the following:

The southern end of this street leads toward an impressive east-west mudbrick wall system of Period III. Two superimposed stages of the wall have been revealed. The later stage ranges from 5.4 to 6.5 metres in width and has been traced so far for more than 73 metres. Piercing the wall system is what appears to be a major gateway with an opening of 2.6 metres. The associated wall at the gateway is 9 metres wide. Traces of a fired brick facing were found bonding the mudbrick wall on the southern side of the gateway. The discovery of this standing wall system provides an unexpected contrast to the massive earthen walls, revetments and platforms that characterise the northwestern corner of Mound E (Dales 1992: 31).

RAJASTHAN, HARYANA, EAST PANJAB AND U.P.

The area as a whole lies between the Sutlej and the Yamuna and between the Panjab Siwaliks and the course of the Ghaggar in the former British state of Rajasthan. That Harappan sites occur in this area have long been known. We have already referred to A. Ghosh's work in the Baran region. Vats' report on Harappa contains a reference to Kotla Nihari and Rupar in the upper Sutlej valley. Rupar was excavated in the early 1930s. Alamgirpur, still the easternmost Harappan site near Meerut, was first identified in 1958-59. Since then an enormous amount of work has been done in this area beginning with excavations at Kalibangan on the delta

course of the Ghaggar in 1960-61. This continued till the early seventies and was followed by Suraj Bhan's explorations and excavations which culminated in a Ph.D. thesis submitted to the University of Baroda in 1972. Suraj Bhan located 97 protohistoric sites in this area: 17 in the Ghaggar valley, 40 in the Drishadvati valley, 24 in the Yamuna valley and 16 in the Ghaggar and other valleys. A detailed list of sites appears in Bhan's dissertation; their distribution is shown in a map published by Bhan (1973). His sites cover the entire spectrum from the pre-Harappan to the late Harappan phases, and he excavated the sites of Siswal and Matthal in the lower part and Daulatpur in the upper part of the Drishadvati system. Siswal represents the early pre-Harappan phase of Kalibangan I whereas Matthal I is supposed to represent its late phase. Matthal II is mature Harappan whereas Daulatpur I is late Harappan. This stratigraphic and associated ceramic index was built up for the area and on behalf of Kurukshetra University, Suraj Bhan and his colleague U.V. Singh organized surveys by their Ph.D. students in a number of districts of Haryana. They also did limited excavations. Bhan and Shaffer (1978) did some further explorations in the late

seventies. Another person who was active in this area is R.S. Bisht who began his work on behalf of the Haryana state department of archaeology in 1971. Following up by prolonged excavations at the site of Banawali in the Ghaggar-Sarasvati. At this place it may be noted that there is still a river course in the area which is locally known as Sarasvati, joining the course of the Ghaggar. The work of the Panjab state department of archaeology seems to be limited principally to the excavations of late Harappan sites. A very significant piece of exploratory work was done by J.P. Joshi and his associates in this state in the eighties, and in the upper Yamuna system. Joshi and his colleagues' field research on the Harappans culminated in K.N. Tandon's excavations at Hulas in the Saharanpur district. The distribution of sites belonging to the pre-/early, mature and late Harappan phases in this area has been published in three detailed maps prepared by J.P. Joshi, Madhu Bala and J. Ram (1984). More recently, there has been some work in the Haryana sector of this area by the Indo-French team of J.P. Francfort whose aim was to prove the existence of a canal-based irrigation system in this area during the Harappan period and earlier. The possibility of a canal-based irrigation dating from this period in the region was first propounded by R.S. Bisht (1982) on the basis of his

extensive exploratory work in North and Central Haryana, and in the Panjab region of India. The present author has observed that the

Sarasvati and its tributaries had probably been extensively harnessed. Protohistoric man apparently dug canals for irrigating fields and storing water in large ponds. The existence of a network of abandoned canals and river beds, dotted with numerous chalcolithic and Early Iron Age sites, in the Sarasvati valley of Haryana bears testimony to this (Bisht 1982: 114).

Francfort postulated the same thing about a decade later through the extensive use of remote-sensing techniques, and he came to the conclusion that 'archaeological sites are located not only on the banks of former natural waterways, but also at a distance from them, sometimes far away and even in the middle of the supposed large river beds'. He points out that the location of a proto-Harappan (early) site on a dune in the middle of the Chautang (Drishadvati) river bed proved that it was 'established after a dry period of a certain time and that no major silting had disturbed it in 4000 years'. The logic of this type of distribution can be explained by the presence of artificial canal networks.

At this juncture it is interesting to point out a contradiction between Francfort's understanding of the location of a major site known as Rakhigarhi away from any river course and Bhan's report (Bhan 1972: 43) that this site seems to have been located on the right bank of the Drishadvati.

The data on the size-estimates of Harappan sites in this area are not available and one can only draw attention to the listed major sites. Bhan (1973: 257) mentions three 'metropolitan centres'—Mitathal, Rakhigarhi, Banawali—'dominating respectively the Yamuna, Drishadvati and Sarasvati valleys'. It is difficult to place Mitathal in the Yamuna valley unless the line of the western Yamuna canal to the east of the modern flow of the Yamuna extends further to the southeast and represents an old course of the river. Bhan argues that this indeed was the case. The two mounds of this site have a 20 m wide gap between them and measure 150 m by 130 m and 300 m by 175 m. The total area is thus 72,000 sq. m or roughly a little more than 7 ha. Banawali is about 1 km to the south of the village of the same name lying above the floodplain of the dried up Sarasvati (locally called Rangoi) on its right bank. This site, according to Bhan (1972), measures 100 m by 80 m, whereas, according to its excavator, R. S. Bisht, it measures 400 m by 400 m (160,000 sq. m or roughly 16 ha) and constitutes a single mound. According to Bhan (1972) Rakhigarhi near Jind measures 600 m by 400 m (240,000 sq. m or about 24 ha) whereas, according to Francfort (1992), the site is as large as Harappa.

J. P. Joshi (1991) has discussed the distribution of sites of this period at the Mansa taluk of the Bhatinda district of Punjab, situated along the

modern Sirhind rivulet which is now a tributary of the Ghaggar. Out of a total of twenty-five sites the measurement of five (pre-Harappan and Harappan) sites exceeds 100,000 sq. m:

1. Dhalewan—1500 m by 1000 m—150,0000 sq. m (roughly 150 ha.).
2. Gurmi Kalan I—1200 m by 1200 m—1440000 sq. m (roughly 144 ha.)
3. Hasanpur II—1000 m 1000 m—100,0000 sq. m (roughly 100 ha.).
4. Lakhmirwala—1500 m by 1500 m—2250000 sq. m (roughly 225 ha.).
5. Baglian Da Theh—1000 m by 1000 m—100,0000 sq. m (roughly 100 ha.)

In addition to these sites there are four sites measuring 500 m by 500 m each (250000 sq. m roughly 25 ha.) and six sites measuring 400 m by 400 m (160000 sq. m/16 ha.). The reason why so many large sites are concentrated in this small section will need further detailed research.

No data are available on the size of the Harappan settlements in western U.P. except in the case of Hulas which is said to measure 330 m by 172 m (56760 sq. m or about 5.5 ha.).

Kalibangan

Although the site was visited by Stein (1942: 179), its Harappan significance was first understood by A. Ghosh (1952: 40). For about a decade from 1960–61 it had been excavated by B.B. Lal and B.K. Thapar (for a comprehensive discussion, see Lal 1979, but otherwise the report is unpublished).

The site lies on the south bank of the dried-up Ghaggar and covers a total area of about 'a square kilometre' (LAR 1960–61: 31). According to R. L. Raikes (1968: 286), the size approaches that of Judeirjodaro. There are two distinctly separated mounds, both rising immediately from the river bank. The western mound is the smaller one, though it is the higher of the two, the maximum height being about 12 m from the level of the surrounding plain. There is no habitational deposit in the gap between the two mounds. It may be pointed out that the site was apparently deserted for some time—as evidenced by the erosion of the then mound (KLB I) at several places and by the accumulation of blown sand in some of the depressions—before the reoccupation of the site (by the Harappans) (Lal 1979: 75).

1. The Western Mound

On the plan the western mound is roughly parallelogrammatic, divisible into two almost equal but separately patterned parts, both fortified. A rhomboid on the plan, each side measured 120 m and thus the overall fortified enclosure measured 240 m by 120 m. The fortification wall was of mudbrick, 3–7 m wide, and had two structural phases, the earlier one using larger bricks (40 cm by 20 cm by 10 cm) than the latter (30 cm by 15 cm by 7.5 cm). The general outline of the wall, broken at intervals by rectangular salients and towers, is clear, although in places, particularly in the western and eastern sides, it is much damaged. It has not been possible in all cases to obtain the exact measurements of the salients and towers because of their damaged condition but to take only one example the central salient on the southern side projected 9.35 m from the main wall face, was 17 m wide and 'rose imposingly with a battered extension' (IAR 1963–64: 30). The walls, salients and towers were all mud-plastered.

The entrance to the southern sector of the fortified enclosure was from the north and the south. The available structural details of the southern entrance are not adequate but apparently it consisted of steps fronting the fortification wall, across which a passage was provided. The northern entrance was primarily in the form of a stairway running up the wall between two centrally located salients. On the basis of the total plan Lal and Thapar (1967: 84) suggest that the southern entrance was meant for the people from the eastern part of the settlement while the northern one was for the residential elite.

The dominant constructional feature inside the southern fortified enclosure seems to have been five or six differently sized mud and mudbrick platforms which were not integrated with the surrounding wall and had passages of varying width between them. Access to the top of the work-floor of these platforms was by means of a series of steps from the level of the passages. The passages fronting the steps were paved. Systematic brick-robbing may have destroyed the details of the buildings which could have existed on the top of these platforms but it appears that no major buildings ever stood on these platforms. The discovery of fire-altars—burnt-brick lined rectangular pits, in one case with delicate remains of an offering (bovine bones and an antler)—is significant and suggests a religious use for the top level of these platforms. Inside the enclosure one also notices a well and a few burnt brick drains. Lal's analysis of this sector may best be described in his own words:

The southern mound contained several mud brick platforms, oriented along the cardinal directions, on each of which stood a special structure. Although in most cases the details of these structures have disappeared owing to subsequent spoliation, there is reasonable evidence about their likely use. Thus, atop one of the platforms there lay a series of seven 'fire-altars' in a row. Behind these fire-altars ran a wall in a north-south direction, which shows that people had to face the east while performing rituals at these altars. The altars were oblong on plan, sunk into the ground and lined with clay. They contained ash and charcoal, besides a cylindrical and faceted clay (burnt or unburnt) stele standing up near the centre. Though in the series under discussion only fragments of what are called 'terracotta cakes' were obtained, elsewhere these were found in sufficient numbers showing that they formed some kind of an offering. To the west of these fire-altars lay embedded the lower half of a jar. It contained ash and charcoal and was evidently connected with the use of fire-altars. Within a few metres of these altars were a well and a few bath pavements suggesting ablutions before the performance of a ritual—a traditional in vogue in India amongst the Hindus (Lal 1979: 77–8).

The northern sector of the fortified enclosure might have contained the dwellings of the elite but little is known about them except that the houseblocks were separated from the dividing or bipartite wall by a wide passage paved with bricks on edge (Lal and Thapar 1967: 84).

II. The Eastern Mound

Across the depression the eastern mound comprises the general habitational area where deep digging has revealed nine phases of construction. A mudbrick fortification wall has been traced for a considerable length on its western and eastern sides, and it is obvious that this wall once ran around the whole of the eastern mound. Its general available width is 3 m to 3.9 m, and the number of maximum available courses is fifteen. In the northern section the wall on the west was built in a box pattern with no filling inside. A 3 m to 7 m wide gateway, connected with an east-west lane, has been inferred on the west. A room situated in the interior of the southern flank of this gateway may be a guard room. The east-west length of the occupational area is about 240 m. The precise north-south length is undetermined but it should be more than 360 m.

There are at least five north-south arterial streets and many lanes, the widths of which vary between 1.80 and 7.20 m. In addition to the entrance gateway identified on the west, there was another entrance in the north-eastern corner. The north-south streets tend to become wider in the south. At some street corners there is evidence of timber posts—protect

ing the houses from vehicular traffic. Except in the last phase when terracotta nodules were used, the streets were largely unpaved. There is no evidence of a regular system of street-drainage but soakage jars were occasionally placed on the streets outside to receive waste water from the house drains made of wood (U-shaped section) or brick. Except for the occasional small mudbrick platforms in front of the houses there was no encroachment on the streets.

Of the many house blocks formed by the intersecting streets and lanes the plan of one may be typical of the rest (IAR 1967-68: 42-5). It had a street each on the eastern and western sides and a lane on the southern side to link the streets. The block had more houses than one. The entrance to one of them was from a lane. The entrance led to a corridor, itself opening into a courtyard. There is no evidence of an entrance from the corridor into the side-rooms. The rooms varied in dimension from 3 m by 2 m to 2 m by 1 m, and as the presence of a single socket on the sill suggests, were interconnected by single-leaf doors, about 70-5 cm wide.

The floors were usually of rammed clay with a soling of terracotta nodules interspersed with large bits of charcoal to make them damp proof, a practice still prevalent in the area. In one case at least, the floor was paved with tiles decorated with intersecting circles. Most of the houses had a 'fire-altar', a scooped-up shallow oval or rectangular pit with a cylindrical or rectangular block fixed in the centre. It is rare to find wells in the houses at Kalibangan. Oblong troughs of mudbricks in courtyards may suggest how fodder was served to the cattle following an age-old custom. In one of the houses a partly preserved staircase suggests an upper storey or perhaps merely an access to the roof which was likely to be flat and mud-plastered. To the east of the eastern mound, outside the fortification wall, a structure containing five fire-altars have been found. There is no other structure in its vicinity. It is possible that this structure had a religious function.

A Harappan cemetery lies outside the city area, about 300 m west-southwest of the western mound.

Banawali

R.S. Bisht (1982: 114) points out that Banawali is located on the bank of the dried-up course of the Sarasvati river in Haryana. As he is familiar with the dried water-courses of the region, which are still a problematic issue, his observations in this context are summed up. In their upper reaches the Ghaggar and the Sarasvati are two separate rivers, the

Ghaggar being the more westerly of them. The Sarasvati has its traditional source at Adi Badri in the Siwaliks. It flows through Kapalmochan, Bhagwanpura, Thaneshwar and Pehoa till it is captured by the flow of the Ghaggar at Bahar. The old course of the Sarasvati, now known as the Sotar valley and about 2-4 km wide, runs through the districts of Jind, Hissar and Sirsa in Haryana before it apparently joins the Ghaggar near the Haryana-Rajasthan border. Bisht points out that there are mounds on both its banks, the excavated site of Banawali being one such mound on the northern bank.

The Harappan settlement of Banawali lay within a rectangular (plan in Bisht 1984: 92) enclosure which measured not less than 300 by 150 m. There was no separate citadel mound; what appears to represent the citadel complex was built on 'the accumulation of pre-Indus debris' and occupied the southwestern and partly the southeastern portions of the settlement. A 5.40-7 m wide wall 'segregates the citadel from the rest of the town' with which it appears to have a common wall on the south and west sides. Two entrances to the citadel from the town-side could be located. One was in the form of a 1.5 m wide gap associated with a burnt-brick built drain in the northeastern corner of the exposed division wall, and the second one was in the form of a ramp from the town side in the northern sector of this wall. At both these places the presence of a bastion has been suggested. Another bastion has been postulated in its southern sector.

As far as the general inner planning is concerned, a good reference point is the presence of two streets on either side of the division wall. Street 1, 5.5-5.6 m wide, is on its inner side, whereas Street 2, 9.1 m wide, is on the town side. These two streets are joined by lanes at the two gates—the 'drain gate' and the 'ramp gate'—mentioned earlier. Lane 1 (1.5 m wide) has been traced with its house-blocks on the 'citadel' side of the division wall. A house with a small chamber and unusually thick (1.20 m) walls was traced here. In another house of the same area there was 'a square fire-place with an earthen cone standing in the centre'.

In the town sector the alignment of seven streets (Streets 2 to 8) and two lanes have been traced. They run in different directions and crisscross each other at different angles. Street 2 is 9.10 m wide while Street 3 (5.5-6 m wide) runs obliquely to meet Street 5 (4.20 m wide). Street 4 runs along the inner side of the outer fortification on the east. Streets 6, 7 and 8 have been traced in the northeastern sector of the excavated area where a more or less complete house-plan has been obtained. It measures 52 m by 46 m and is entered from a lane. The plan with several rooms, a large

courtyard, a bath with traces of a soakage jar and a burnt brick built drain is self-explanatory, but there are two interesting features of this house. First, five small cubicles (1 m by 1 m, in one case 2 m by 1 m) were located in the thickness of the walls, possibly as blind vaults or storage cells, and secondly, a room in the northern part of the house was found to contain a platform built against the brick wall and some fireplaces (one with a terraced cone standing in the centre) before it. There was a lot of ash and charcoal in the room. Bisht (1984: 95) thinks that this room was used for household rituals.

Another major house complex has been excavated near what Bisht calls the 'drain gate' between the citadel and the town.

It contained several rooms, probably a courtyard and a corridor, a large room having many earthen jars half embedded in the house floor, a sitting room paved with bricks, a worship room with a fire-place, and a kitchen with several hearths—both on an elevated ground and the ground level—a toilet fitted with a wash-basin emptying its sullage through a pucca drain into a soakage jar placed outside the major street, and a roadside platform constructed against the building complex and just outside the room of the pottery jars mentioned above. A prominent merchant might have been the owner of this house since it has given a rich harvest of seals, weights, beads, including those of gold, lapis and etched cornelian, besides the deluxe pottery of the age (Bisht 1984: 96).

It is interesting to note that there is no evidence of a public drainage system here, as at Kalibangan. In both cases there must have been a system of municipal scavenging. Bisht (1982: 118) notes that there is very little household refuse in the composition of road materials.

The minor excavated Harappan or Harappan-related sites of the region have been surveyed by Y.D. Sharma (1982), K.N. Dikshit (1982) and J.G. Shaffer (1986), among others. None of them is a major settlement, and detailed structural evidence has not been obtained from any of them.

KUTCH, KATHIAWAR AND MAINLAND GUJARAT

The almost quadrilateral peninsula of Kathiawar juts out into the sea between the Gulf of Kutch and the Gulf of Cambay. A tidal channel once joined the little Rann, southwest of Kutch, with the Gulf of Cambay. Though silted up since then by mainland rivers like the Sabarmati, Lun, Banas and Rupen, the course of the old channel is still marked by the lakes and marshes of the Nal depression.

Inland Kathiawar beyond the coastal strip breaks into a series of hills, northeastern and southwestern, lined by a narrow and sinuous ridge. The hilly central tract is the watershed of the peninsula. The rivers which flow

out are the Bhadar, Shatrungi, Machu, An Bhogava, Sukha Bhadar, etc. The drainage pattern is almost radial.

Coastal Kathiawar, beyond the muddy foreshore, mangrove swamps and the windblown hills of the coast itself is a fertile stretch of alluvium, the south and southwest are particularly fertile, the strip of the country called Nagner being very fertile and well watered. This belt of alluvium widens in the northeast, i.e. in the lower basin of the Sabarmati, which is called Bhal in the local language.

Between the Rann and the Gulf of Cambay, Kutch is not unlike Kathiawar in topographical detail—a knot of central hills with outlying narrow alluvial basins except in the north where the Rann intervenes. The peninsular Kutch and Kathiawar shade off into the latitudinal mainland strip of Gujarat under the shadow of the western Ghats and the Aravalis. In between the swampy coastal waste and the alluvial piedmont between the highland and the plain is 'the great shelf of firm alluvium, some 250 miles long and up to 60 wide' (Spate 1967: 650) and drained by the lower reaches of the Sabarmati, Mahi, Narmada and Tapti.

Sindhu Harappan and Sorath Harappan

Before I discuss the relevant archaeological data from Gujarat I would like to state that I find it difficult to attach any significance to the proposed distinction between 'Sindhi Harappan' and 'Sorath Harappan'. A clear statement of this distinction, initially proposed by G.L. Possehl and M.H. Raval (1989: 15) and subsequently restated by Possehl and his associates (Possehl and Rissman 1992), comes from K.K. Bhan (1992):

The first category of settlements, ... designated as 'Sindhi Harappan', share material inventory of Harappan sites of Sind as well as reflect the variable impact of local 'non-Harappan' and 'early/pre-Harappan' ceramic types. This group is represented by 20 settlements such as Desalpur, Surkotada, Dholavira and perhaps all the listed Mature Harappan sites of Kutch as well as Nageswar and Lothal in Saurashtra, and Nagwada I and IV in north Gujarat. This category of settlements appears to have developed to facilitate administration, trade and access to raw material. The other category, designated as 'Sorath' Harappan is represented by 152 small, simple rural settlements. Most of these have an average size of 5.3 hectares except Rojdi, which is approximately seven hectares, having structures with stone foundations and a stone wall enclosing the settlement. These settlements have simple architectural features such as remains of round walls at Zakhada, Kanewal, Nesadi and Vagad, and have thus been interpreted as small villages and dry season pastoral camps engaged in millet cultivation (Bhan 1992: 174-5).

I find little in Bhan's functional interpretation of these two

supposed categories of Harappan settlements, the archaeological literature on the Harappans in Gujarat has in recent years become as esoteric as the literature on south Indian megaliths. I shall restrict my comments to the proposed distinction between 'Sindhi' and 'Sorath' Harappan. First, why should the first category be designated as 'Sindhi Harappan' and not as 'Panjab Harappan', 'Haryana Harappan', and so on? What is the special 'Sindhi' stamp on the twenty Kutch sites and the few other sites in Saurashtra, which Bhan has mentioned? Secondly, why should the peninsula of Saurashtra alone have a very large number of a functionally separate class of mature Harappan settlements? Why should the peninsula of Kutch in Gujarat not have them, or for that matter, mainland Gujarat? If there is a special geographical reason for this situation, I am not yet aware of it. Thirdly, when the stratigraphic evidence is in conflict with the radiocarbon dates, do I accept the radiocarbon dates and ignore stratigraphy which is the main basis of archaeology itself? Fourthly, how do I handle radiocarbon dates? Do I ignore the calibrated range altogether and accept only a mean point in that range?

The primary basis of the postulated distinction between 'Sindhi' and 'Sorath' Harappans is provided by the radiocarbon dates from Rojdi (Possehl and Rissman 1992) and Vagad (as Bhan 1992 argues):

The material inventory of Rojdi initially suggested that the history of the site was to be found within the post-urban phase, with a possibility that the settlement was founded in the later part of the Harappan Urban Phase. However, new radiocarbon dates place most of the occupation within the time period of the Urban Phase Harappan (Possehl and Rissman 1992: 434).

The stratigraphy established by Possehl and Raval (1989) is not easily understood, but it is known from Steven Weber (1991) who apparently worked at the site that 'Prabhas Ware' occurs at all levels of the site and 'Lustrous Red Ware' is present too except in the earliest level. On the basis of the latter evidence, the earliest level of Rojdi can be equated with Rangpur IIB. Regarding the Prabhas Ware it may be noted that this pottery occurs in the early levels of Phase V or the late Harappan level at Lothal. As far as the general understanding goes, the occupational span of Rojdi should be equated with Rangpur IIB-IIC and III (this is also the opinion of R. S. Bisht with whom I discussed the issue in 1992).

As far as the implication of the use of terms such as 'Sorath Harappan' is concerned, Mahgal (1990b) has already described it as an example of 'archaeo-political frenzy'. It is palpably a part of recent attempts to seek ethnicity in Indian proto-historic archaeological records. These attempts

regrettably choose to ignore the fact that 'ethnicity' has a history too, modern ethnic groups are usually based on language identities. For instance, the Bengalis of modern India may claim themselves to be an ethnic group, but this identity is based almost wholly on the Bengali language and literature which has evolved only over the last thousand years or so, with a great admixture from various quarters. Secondly, large ethnic groups may split into sub-groups because of different historical situations, and in time, these sub-groups may become major ethnic groups in their own rights. The point is that ethnicity in south Asia is not a rigidly defined historical entity with its own archaeological record. Attempts to seek ethnicity in archaeological records are about as valid as attempts to establish the racial basis of a particular culture. Biological heterogeneity of population and the ideas of race and ethnicity are not the same in archaeological records.

Lothal

Among the excavated Harappan settlements in Gujarat it is Lothal, discovered by S.R. Rao in 1954 and excavated by him between 1955-62 (with a season's break in 1960-61?), which still commands primary attention. The site lies in the rich wheat and cotton growing area of Gujarat, the Bhal, between the Bhogavo and the Sabarmati. This area, slow-lying, with sheet floods as one of its annual features. For about three months in a year the villages of the area, which are located on artificial earthen mounds, 'look like small islands in a vast sea' (Rao 1979: 19). Rao observes that the sheet flooding of this low-lying area 'must have necessitated construction of irrigation works such as dams and canals'. *Acacia* and *Ficus religiosa*, found during excavations, suggest a dry deciduous type of vegetation, suggesting in turn no change in vegetation and climate since Harappan times except an increased aridity caused by biotic interference (Rao 1979: 20).

The enclosed area of Lothal does not seem to measure more than 240 m by 210 m, but Rao (1979: 20) argues that Harappan potsherds and bricks are found considerably to the south of this enclosed portion. The nearest point to the sea is at present 10-12 miles away but there is a strong local belief that the sea was once much nearer—a likely enough hypothesis in view of the high siltation rate of the Sabarmati delta.

A little more than 8.5 m thick occupational deposit at Lothal has two main periods—mature and degenerate or late Harappan—and five conventional phases, the first four of which belong to the mature Harappan

period. A layer of flood-borne debris is supposed to intervene between each structural phase. In the first phase Lothal was a small village with mudbrick houses and a peripheral mud wall. In its early levels non-Harappan wares such as micaceous red ware, black-and-red ware and coarse grey ware occurred more frequently than the Harappan wares, which increased in greater quantities only in the late levels. The typical Harappan city is that of Phase II: the peripheral wall was strengthened and enlarged with mudbricks on all sides except in the north where burnt bricks were used. The peripheral wall with an entrance opening on the southern arm had a width which varied from 42 ft (12.8 m) in the south to 72 ft (21.94 m) in the east. It was about 6–8 ft (1.82 m–2.43 m) high in the south and about 8 ft (2.43 m) high in the east. The houses were built on artificially raised mud and mudbrick platforms whereas at the southern end of the settlement a separate complex, designated by the excavator as the 'acropolis' of the site, stood higher on a 14 ft (4.26 m) high platform and enclosed three blocks, one of which was a 'warehouse' for storing cargo unloaded in the 'dock' area to its west. The settlement of this phase has a regular lay-out with both underground and surface drains, cess-pools and soakage jars. After a flood of 'considerable magnitude', which ushered in Phase III, the habitational area was extended and the houses built on higher platforms. This phase came to an end due to 'a flood of great intensity and duration' leading to 'successive layers of flood-borne debris, silt and sand accumulating to a thickness of 4 to 5 ft over the ruined buildings' (Rao 1979: 31). There were Harappan settlers afterwards in Phase IV, but without the earlier level of accomplishment. In any case there was another 'great flood' at the end of this phase. In Phase V which has been correlated to Rangpur IIB and IIC (minus the lustrous red ware of these levels at Rangpur) the settlement had only 'herry-built houses of mud and reeds' (Rao 1979: 34). The classic Harappan settlement plan of Lothal can thus be understood only from the remains of Phases II and III.

The overall planning seems to have been based on rectangular houseblocks, seven of which were traced in the excavations. The size of these blocks varied from 375 ft by 75 ft (114.3 m by 22.86 m) to 160 ft by 135 ft (48.78 m by 41.14 m), and the individual platforms on which the houses stood varied in height from 4 ft to 12 ft (1.21 m and 3.65 m). Block A lying to the north of the 'acropolis' has been interpreted as constituting the 'bazaar part of the Lower Town'. A street, designated as Street 1, divides the block into two sectors, eastern and western. It is not very clear as to why this has been considered a market area but perhaps the location of a copper smithy in its northern part has something to do

with it. It is also in this sector that a house has been identified as 'that of a merchant engaged in foreign trade'. This identification is based on the finds of reserved slip ware, 2 steatite seals, 3 carnelian beads and 8 gold ornaments with axial tubes in some of its rooms. The size of the house is 47 ft by 23.5 ft (14.32 m by 7.16 m) and this had, behind a 40 ft (12.19 m) wide verandah, a number of rooms of three sizes (8 ft by 9 ft or 2.43 m by 2.74 m; 10 ft by 5 ft or 3.04 m by 1.52 m; and 6 ft or 1.82 m square). A soakage jar, 'the rim of which was skirted by burnt bricks' was placed within a mudbrick semi-circular enclosure projecting from the plinth and there was another mudbrick projection for the steps to the verandah. Most of the houses had well-arranged bathrooms/ablution places connected with the drains/soakage jars outside. The houses were generally made of mudbricks. Some houses possessed sacrificial altars enclosures of bricks and clay, containing ashes, triangular terracotta cakes and oval terracotta balls. Two houses have been identified as bead factories. An interesting feature found associated with the copper smithy is the provision of a niche in the outer face of the western wall on the roadside. Rao (1979: 95) suggests that oil lamps were kept in such niches and similar niches meant for lamps in the outer walls of present-day houses at Gundi and Saragwala may be survivals of an ancient tradition.

Nine streets and 12 lanes have been traced at this site. They were all paved with mudbricks and covered by a layer of *kankar* (gravel). The width of the streets varied from between 12 ft and 18 ft (3.65 m and 5.48 m), the lanes being narrower, between 6 ft and 9 ft (1.82 m and 2.74 m). The internal width of the street drains is quite impressive, 4 ft (1.21 m) to 2 ft and 1-1/2 ins (0.64 m). Their gradients are steep enough for easy sewage disposal as well as storm water'. There is even provision for screens at the mouth of the drains to collect solid waste matter before it débouched into cess-pools, one of which measures 4.5 ft (1.31 m) wide and was about 5 ft (1.52 m) deep.

At least two important structural complexes have been unearthed at the 'acropolis'. One of them is the 'warehouse', a plan of which has been published by Rao (1979: 112). The mudbrick podium on which the complex stands has a maximum height of 13.5 ft (4.11 m) on the northern side and approximately measures 160 ft by 135 ft (48.76 m by 41.14 m) and is further protected by an outer platform. Originally 12 solid blocks of finely burnt mudbricks separated by 4 ft wide criss-cross passages and measuring 2 ft (0.61 m) square and 3 ft (0.91 m) high stood on this podium. As many as 65 terracotta sealings have been found which bear

impressions of packing material such as reed, woven fibre and matting and of twisted cords tied into knots on the reverse and Indus seals on the obverse. As Rao (1979: 113) observes, 'one can easily deduce from the data that wet labels of clay were affixed on packages of goods secured by cords and were sealed with one or more seals for authenticating the contents'. Rao identifies this as a 'large warehouse wherein packages of goods were examined and stored. The mudbrick bases had a roof of some perishable material over them to protect goods from rain and sun'.

Another important structural group in the 'acropolis' has been excavated in Block B (Rao 1979: plate LVIII). The complex as a whole is centred around two major streets, a few lanes and two public drains, draining both the northern and southern sectors. It is the southern sector which is more interesting and shows a row of 12 houses, each 25-8 ft (7.62 m-8.53 m) long and 18 ft (5.48 m) wide, with their 'ablution pavements' built in the rear portions and connected with the main drain at the back.

The entire eastern sector of Lothal is taken up by the 'dock' which is roughly trapezoidal in shape (western embankment wall 716 ft 218.23 m, eastern embankment wall 705.5 ft/215.03 m, southern embankment wall 117 ft/35.66 m, northern embankment wall 123 ft/37.49 m) and enclosed by a strictly vertical, four course wide and continuous burnt brick wall with no access to the bottom. The maximum existing depth seems to be about 14 ft 4.26 m. The basic constructional features which seem to mark this out as a 'dock' are three: two inlets (one each in the northern and the southernmost portions of the eastern side) and a spill-channel in the form of a narrow brick-built water-passage leading off from the southern arm. Through the inlet channels a ship could enter at high tide and by sluicing off water through the spill-channels a regular level of water could be maintained inside the enclosure at all times.

The spill-channel and the eastern inlet are described in some detail in the reports. A 23 ft (7.01 m) gap in the eastern wall led to a channel outside, also of the same width and cut into the natural soil. This channel linked the eastern inlet with the second stage of the ancient river-bed. Moreover, 'a dwarf wall at the inlet gap retained water at low tide within the docks to enable the ships to move about' (Rao 1961: 302). At the mouth of the spill-channel 'could be seen two grooves for a sliding door. Narrow steps at the end, and grooves at regular intervals in the side walls of the channel suggested that a door could have been made to rest against wooden logs at desired places to maintain the required level of water' (IAR 1958-59: 14).

The gap in the northern embankment, i.e. the northern inlet, is said to be about 40 ft (12.21 m) wide, connected with a channel leading to the first stage of the ancient river-bed. According to Rao the 'dock' which was built in Phase II of the site and continued to be in use in Phases III and IV, had two stages. In the first stage 'the ships reached Lothal from the Gulf of Cambay through the estuary of a river flowing along the western margin of the town and entered the dock through the gully running east-west on the northern margin' (Rao 1965: 32). This explains the northern inlet.

The eastern inlet, according to him, was created in Phase IV when the flow channel of the river was silted up 'due to an unprecedented flood' (Rao 1965: 32), leading to the shifting of the river to the eastern margin of the city instead of to the western one. In the history of the 'dock' this marks the second stage. Rao points out that because of a comparatively narrow width of the eastern inlet (23 ft) and the somewhat restricted depth (2 m-2.5 m) of the connected channel, large ships could not have entered the dock in the second stage. 'But, originally, the dock was designed to receive ships of 18 to 20 m in length and 4 to 6 m in width through the 12.21 m wide inlet in the northern embankment. At least two ships could pass through the inlet simultaneously' (Rao 1965: 33). On the analogy of the coast of modern Gujarat he further calculates that 'it is reasonable to suppose that ships with a draught of 2 to 2.5 m could enter the dock at high tide through the inlet in the eastern embankment (second stage)' (Rao 1965: 35).

To substantiate the general idea of a dock, Rao has also referred to the discovery of a few 'anchor stones'—mostly large spherical perforated stones, and the evidence of external maritime contact of the site as a whole. The postulate of a dock at Lothal has been questioned a number of times in archaeological literature (cf. Shah 1960, Leshnik 1968). Rao (1961) has cited the opinions of various maritime authorities of India, who are professionally familiar with the Gujarat coast, and it appears that there cannot be any theoretical objection to accepting this complex as a dock. What is equally important is that no better explanation has been offered. Rao's assumption that the enclosed excavated basin could have been an irrigation tank falls through because one cannot really think of the settlement of Lothal's size with such a large irrigation tank even in the arid Gujarat. Moreover, the ethnographic support produced by Rao in the form of a local goddess worshipped by sailors makes the idea of a dock more plausible.

The features of the city beyond the 'dock' take the form of a 'wharf'

which is basically a mudbrick platform, 800 ft (243.84 m) long and 42 ft (12.80 m) wide, adjoining the western embankment, and supposedly the place built for loading and unloading goods. The dockyard worker probably lived in small houses built on a clay platform adjoining the northern embankment. The Lothal cemetery lies to the northwest of the settlement and a street is supposed to have led to the place.

Rangpur, Surkotada and Dholavira

Among the other excavated mature Harappan settlements in the Kathiawar peninsula Rangpur may be mentioned (Rao 1963) where in Period IIA one encounters houses on mudbrick platforms, burnt brick drains connected with bathrooms, and also a 3 ft (0.91 m) deep public drain. Not much structural evidence has been obtained from sites such as Kutia and Padri.

The Kutch peninsula has recently emerged as an important focus of mature Harappan settlements in Gujarat. K. V. Soundara Rajan's earlier excavations at Desalpur (IAR 1963-64) showed a mature Harappan settlement with a fortified complex built of rubble and stone (Soundara Rajan 1984), but a proper study of Kutch from this point of view had to wait till J. P. Joshi's survey of sites in the area and excavations at Surkotada (J. P. Joshi 1979-1990). Of the three phases of Surkotada the last phase, IC, may be put in the late Harappan category. The earliest two phases (IA and IB) clearly reveal the nature of the mature Harappan settlement at the site. The focus is on a citadel and its residential annexe but no 'lower town' complex has been unearthed here. To the north of the fortified enclosure is the cemetery where pot burials (with or without bones) and the practice of keeping a large stone slab on the top of the pit or making a stone cairn over the pit or placing a vertical stone slab in the western section of the pit are novel discoveries in the Harappan context. Before the citadel and its residential annexe were constructed the ground level was raised by earth deposits by about 1.5 m in the citadel and 0.5 m in the residential area. The dimension of the residential complex could not be properly determined but the citadel section roughly measured 60 m square. The basal width of the mud and mudbrick ramp in the citadel area was 7 m. It had a rubble veneer on the outside and plaster on the inside. A buttress of mudbrick with rubble cushioning was provided at a later stage on the eastern side. The major entrance was on the southern side but there was another entrance on the eastern side communicating with the residential annexe. The wall around the residential

sector was 3.25 m wide. Three phases of rubble-built houses were traced, and although no complete house-plan could be obtained there was evidence of a drain, bathroom and soakage jar. The plan did not significantly change in Period IB.

R. S. Bisht's work in Kutch has further highlighted the significance of the region in the Harappan scheme. Although adequate surveys of the southern and western sections are not complete, Bisht (1989) can refer to the discovery of sixty sites, of which about eleven 'have shown evidence of fortification while many others provide strong suggestive indication of the same'. Another significant point is that '70% of the total sites had their beginning during the early mature phases while the remaining came up during the late phase only'.

Although Kutch has a meagre annual rainfall (300-400 mm), it has a good reserve of underground water which is sweet and potable in the central and northeastern areas. Before the advent of irrigation the emphasis was on summer crops such as bajra, jowar, pulses, cotton, other fibrous plants, wheat, sesamum and other oilseeds, etc. The winter crops accounted for only 4 per cent of the cultivated area. It may be noted that there is evidence of the damming of streams in and around the Harappan site of Dholavira. One cannot also ignore the fact that Kutch offers good grazing land, and people find livestock farming more profitable to offset the usual agricultural deficit. Moreover, there is a good distribution of different rocky materials, and Bisht points out that a Harappan mound, Khaddaria, was meant for extracting chert, carnelian, agate and jasper which were possibly available at the site itself.

We have referred to the postulate that the combined stream of the Indus and the Nara used to flow into the sea in the area of the Rann of Kutch. If so the present day Kutch may be visualized as an isthmus and at the mouth of the Indus Nara delta. The present day Rann is a desolate salty waste subject to sea-water inundation by sea water, although it remains more or less dry between November and March. However, communication across the Rann does not pose any problem even during the period of inundation because this water is generally less than a metre deep. Thus, the Rann is always crossable on foot, in carts or riding a camel, a horse or a mule (Bisht 1989). Whether the Rann was once an arm of the sea or not is a moot point to settle because even in recorded memory the area has been subject to tectonic changes due to earthquakes.

The most important Harappan site in Kutch is Dholavira which has been excavated in recent years (Bisht 1991). The site lies in the northeastern corner of Khaddi Bet, an island in the mid portion of the Rann. Except

for the presence of potable subsoil water, the area has nothing to recommend it agriculturally because the sterile soil, although a fertile sandy loam, has a limited distribution and lies in any case in an area of very limited annual rainfall (262 mm). The failure of monsoon rains over a period of 3-5 years is said to be frequent and causes people to migrate from the area. As Bisht (1991: 71) puts it, '... the land has almost an incongenial environment for human occupation and the situation might not have been much different in the past. In such circumstances, location of such a large city as Dholavira, indeed poses an enigma and as such a challenge to archaeologists for a satisfactory solution'.

The site, or at least the position lying within the outer fortification enclosing wall, lies between two seasonal rivulets—the Mandars in the north-northwest and the Manhar in the south. The Mandars is today beyond the city wall but the Manhar flows through the southeastern section of the enclosure. These two rivulets join each other about 1.5 km downstream. The inside measurement of the enclosure is 767.6 m (east-west) by 614.15 m (north-south). The excavator refers to a series of small mounds and built-up area 'far and wide to west and northwest of the main site' and interprets them as 'suburban establishments'. The overall area, according to him, is more than 100 ha. The outer wall which is apparently built of mudbricks with a veneer provided by dressed stones has not survived through its entire length. For instance, it has not survived in the eastern section where it ran close to the built-up area. The nature of the wall has been understood from the excavations of its southern segment. It was 8.40 m wide at this point, mud-plastered on the inner face and stone covered on the outer face. It seems that the stone veneer was added later when its initial width was also increased. Traces of bastions have been found at some points. In the east the wall has worn down to the rock bed which itself is higher than the level of the built-up area on that side. Bast points out that there are raised pathways on either side of the wall 'for an easy walk of the patrolling guards round the fortification'.

Apart from the well defined outlines of open spaces which were added all over the areas adjacent to the outer fortification except in the east and had a plaster of calcareous clay (light deep pink and off-white in colour) the built-up areas of the settlement had three distinct foci: the 'lower town' which was not separately enclosed and lay to the east, the 'middle town' which had its own enclosure walls, and the 'acropolis' which had two subdivisions, the western 'barley' and the eastern 'castle'.

The two divisions of the 'acropolis' were each fortified, also serving as

a common dividing wall. The occupational deposit in the eastern section is about 14 m. The western section which is also the lower one was never used for regular living, according to the excavator. The occupational deposit here is 7 m thick.

It is the eastern section which has been better studied. Its original massive mudbrick fortification' was, on its inner side, first widened and then provided with a revetment before undergoing, on the outer side, substantial reconstructions after a 'devastating natural calamity'. Its total extant height and width (excluding the revetment) are 9 m and 15.5 m respectively and it possesses a steep batter. It further appears that there are centrally located gates on all sides, two of which, those on the east and the north, have been excavated. Within the thickness (12.30 m) of the defensive wall the eastern gateway is provided with a staircase, a sunken passageway and an elevated chamber, with the whole complex having a high terrace in front. The front edge of the chamber apparently possessed a row of pillar supports or foundations—neatly cut and highly polished limestone blocks and *damaru*-shaped pillar-bases, some examples of which have been found in the excavations. A 31 cm long and 3 cm deep groove in each of the discovered stone blocks was possibly meant to hold a square pilaster made of stone or wood'. The front terrace on the inner side, in front of the north gate, was 6 m high from the ground level and projected 12 m into the space in front. Its east-west length was more than 19 m.

What is called the 'middle town' lies to the north of the 'acropolis'. This was enclosed too, but whereas the eastern, western and northern walls were made of mudbricks and had stone-facings, the one in the south had the parallel stone walls with their interstices filled up by each. This may be a late construction. The western wall is 4.20 m wide.

No specific evidence seems to have yet emerged from the 'lower town' in the east. Its east-west measurement is 300 m. The measurements of the 'middle town' are 335 m (east-west) and 181 m (north-south), although the westing measures 200 m. If the built-up area to its south is taken into consideration it will measure 233 m from the north to the south. The 'upper town' or the 'acropolis' is 114 m by 94 m while the western section is about 123 m square. These measurements which have been taken on small scale are not very specific.

In addition to having open space on the inner side along the walls of the 'outer' fortification, there was a vacant space about 55 m wide between the 'outer' and 'middle' fortifications. The 'middle town' (Another noteworthy point is

that there was a 'massive wall' which emanated from near the east gate of the 'acropolis' and met the outlying enclosure wall in the south after running in an irregular fashion.

ASPECTS OF HARAPPAN URBANISM

Some Features of Distribution and Size

The previous sections contained the basic settlement data from the major excavated Harappan settlements in different areas. Although the general distributional aspects of these settlements were referred to, they are discussed more specifically at this stage.

The presence of the mature Harappan settlement of Shortughai in the Oxus plain in northeast Afghanistan is still problematic in a way. It is a small (2.5 ha, 10125 sq. m) and isolated site. However, Gardin's premise that the Harappans were responsible for introducing a system of canal-based irrigation in this part of the Oxus valley implies that the Harappan occupation in the region was more deep-rooted than the available data would suggest. All that one can infer now is that Shortughai was a Harappan trading colony. Trade in this context could be based on the Harappan side, on the lapis lazuli and rubies of Badakhshan and tin of central Asia and Afghanistan. Although the discovery of lapis lazuli in the Chagatai has considerably devalued Badakhshan as a source of Harappan lapis, still the location of Shortughai suggests that the Harappans were getting a part of their lapis supply from that region. Central Asian raw materials such as jade could also come through Shortughai.

The two or three Harappan sites on the Makran coast—Sutkagendor, Sotkagoh and Kharrakot—have been generally interpreted as ports in the maritime links with the Gulf and Mesopotamia, and with the discovery of an Omam sherid at Surkotadar (Chakrabarti 1990) the hypothesis has gained strength. At the same time, this may not have been the chief or the primary function of these settlements. First, basic communication between the Makran coast and Sind could perhaps be more easily maintained by sea; one understands that different manufactured items including pottery used to be shipped from Sind to the Makran coast (Grove 1990), and there is no reason to believe that the situation would have been significantly different in precolon story. Both Sutkagendor and Sotkagoh are located in areas which facilitated the movement of such goods to the interior. Secondly, the famous dates of the Panjar oasis to the north of the coast were perhaps among the goods shipped to Sind from the interior and passed on to the coast. The Harappan sites at Larkana

in the estuary of the Windar river in Las Bela may have a trading component too, as is indicated by Dales' report of a 'painted jar of possible Persian Gulf origin' (Dales 1979: 266). All these sites are small in size. The fortified enclosure of Sutkagendor measures 15000 sq. m or less than 4 acres (less than 2 ha.). The general mound of Balakot is said to be 28000 sq. m or roughly 7 acres (less than 3 ha.). This size contrasts sharply with the size of a site like Nindowari in the copper-rich section of Las Bela. Nindowari reputedly measures 80 ha. which may be a gross exaggeration considering that it is basically a kind of ceremonial site with a large platform, etc. The hills of south Baluchistan do not seem to contain evidence of distinct Harappan settlements, although there is evidence of Harappan contact at some Kuli Mehi sites in this area. Elsewhere in Baluchistan, Dabarkot (180000 sq. m, Jansen 1979: 260) in north Baluchistan seems to possess a distinct Harappan level, along with an extensive Harappan presence at another mound in the same region, Duk. Considering the accessibility of Afghanistan from this area, Dabarkot may be a trading or resource-procuring settlement. It seems that the Taro river plain in which Dabarkot is situated was an area of some importance for the Harappans.

As N. G. Majumdar (1934) pointed out years ago, the Harappan sites in Sind and Kohistan and the Kirthar predominate are generally near the local perennial springs and probably served the dual purpose of agriculture and resource procurement. Irrigation was achieved either by damming the torrents when there was a rush of water from the hills during the rains or by carrying off water from the springs by means of channels. The region also features as a raw material procurement area because Majumdar frequently refers to the scatters of chert blades and flakes here. The sites in the Lake Manchar area deserve special mention. The Manchar Lake in Majumdar's time was about 8–10 miles in length and breadth, swelling seasonally in inundation time with water from the Indus on the one hand and the rainwater from the hills on the other. Majumdar argues that the elements of La Chhato near this lake must have been heavily dependent on fishing and it may suggest, also on the cultivation of kharif crops, at least in winter. Majumdar further refers to the top of the Garhi as a centre of the flint-knapping industry, something like the recent discovery of the Harappan presence in the Sukker Rorh hills (Dales, Bales, and Cremashi 1990).

Harappan sites in the Larkana area of Sind—Mohenjodaro and Dabir—were certainly a trade advantage but did it also serve in the protohistoric period a role similar to the town of Shikarpur located more or less in the same belt? It is the main river and the main trade route in the region.

land trade stretching across to Iran and central Asia in the nineteenth century? Further the riverine route was naturally important, although while voyaging upstream against strong currents, the goods were carried for short stretches by camels before being embarked again on the Indus (Lahiri 1992: 116 ff). Lahiri has moreover pointed out that 'there were several overland routes connecting southern Sind to the northern regions. An old trade route went north from Karachi to Thano Bula Khan and entered Larkana district north of the Laki range. This route was undoubtedly significant in this period, considering the cluster of sites all along it from Karachi district, where there was a concentration of sites around Ahladino, to Karachi, Amri, Ghazi Shah, Ali Murad, Lohumjodaro to Mohenjodaro in the Larkana district' (Lahiri 1992: 116). In fact, the special craft activity areas of Mohenjodaro hint at the possibility of its role as a manufacturing and redistributive centre linked to both caravan trade in the western regions and riverine trade with other inland areas. Lahiri points out the occurrence of a plethora of raw materials and indications of a large number of manufacturing activities at Chanhudaro and quotes Mackay's opinion that the ancient city was very favourably located for trade. Ferry crossing points across the Indus, the importance of which has been emphasized by the early twentieth-century writers on Sind, might also have played a part in the location of settlements such as Chanhudaro. Another point which may be noted about the distribution of Harappan settlements in Sind is that, even if we adhere to the earlier estimate of 20–50 acres for Mohenjodaro, it is about three times the size of the nearest large Harappan settlement in Sind, which is Naru Waro Dnaro (roughly 86 acres). Chanhudaro is on the smaller size—about 16 acres—whereas the bottom end of the scale is indicated by sites like Ahladino which is not much more than 2 acres.

In Cholistan, out of 174 mature Harappan sites, Mughal (1900) offers size category data for 73 sites: 0.1–5 ha: 44 sites; 5.1–10 ha: 20 sites; 10.1–20 ha: 8 sites; over 80 ha: 1 site. What is perhaps more interesting was the 'emergence of the areas exclusively earmarked for kilns and mass production of items that are recognized at 79 sites' (Mughal 1992: ml 18). Some of these sites were involved in copper smelting, the occurrence of slag has been reported to be a frequent feature. As Cholistan is out of the way of any resource distribution area but is easily accessible from Rajasthan (for the specific routes between Bahawalpur and Bikaner—Jaipur, Lahiri, 1992: 126), the Rajasthan copper must have been among the primary metals smelted in this area. In this connection Lahiri (1992: 119) writes:

Bahawalpur was of great significance in the trade and trade route network connecting the Indus plains with the Punjab and Rajasthan and further south with Gujarat. In fact the region, at the end of the nineteenth century, used to enter into commercial transactions with Karachi, Lahore, Bombay and Calcutta. The chief centres of commerce were Bahawalpur, Ahmadpur East, Allahabad, Kharpar and Haslpar, and part of the commerce used to go to Afghanistan and Pakistan.

Beyond Cholistan the Harappan sites spread out, first comparatively thinly and then densely, in the northeastern direction towards Rajasthan, Haryana, Punjab and the upper part of the Ganga Yamuna Doab in U.P. The drainage lines control the distribution, and as one proceeds towards the Siwaliks from the lower side, the drainage lines fan out. This is reflected in the pattern of site distribution in the maps prepared by J.P. Joshi et al. (1984). It is possible that the irrigation canals of the period, the existence of which has been strongly argued for by Francfort on the basis of scientific studies, tended to follow the alignment of some older drainage lines, which, in fact, has very often been the case in India.

Except for some occasional outliers of the Aravallis the entire region was arid, and the Harappan settlements of this region must have had agriculture as the mainstay of their economy. The relevant data are not always published, but it appears that the average size of settlements here was not more than a few acres, going up to Bahawalpur (Rakhigathi) to about 3–40 acres (about 1.6–17 ha) and 60 acres (about 25 ha) respectively. The height of the mound of Rakhigathi, which Francfort for some reason refers to as being as large as Harappa, was put by Suraj Bhan (1972) at 30 m, and this fact in itself suggests the existence of a huge mud and mudbrick structural complex at the site.

A great complexity has been added to the Harappan distribution situation in this region by the report of twenty-one sites in an area of approximately 50 by 25 km (Joshi et al. 1984). Five of these sites, all with pre and mature Harappan pottery on the surface, are supposed to represent the following:

Sites	Measurement	Area
Trakwari	1500 m by 1600 m	50,000 sq m about 150 ha
Chandri Kautil	1200 m by 1200 m	144,000 sq m about 143 ha
Hampir II	1000 m by 1000 m	1,00,000 sq m about 100 ha
Chandri	1500 m by 1500 m	225,000 sq m about 225 ha
Chandri	1000 m by 1000 m	1,00,000 sq m about 100 ha

These sites are said to be situated at a distance of 3–5 km from each

other. Again, some of these mounds are reported as being 8–10 m high. So they cannot be said to be sites with marginal occupational deposits. They have to be admitted as being regular, massive settlements, with four of them being in the category of Harappa (150 ha, Dales and Kenoyer 1992) and one of them being as large as Mohenjodaro, even in the light of the current estimate of the size of Mohenjodaro.

Harappa, as Lahiri's (1990) analysis clearly indicates, was a major manufacturing centre. She lists evidence of the use of the following raw materials: steatite, alabaster, ivory, shell, coral, carnelian, agate, jasper, chalcedony, jade, lapis lazuli, silver, gold, lead, chert, sandstone, limestone, yellow Jaisalmer stone, flint, haematite, quartzite, basalt, *amg-i-abri*, marble, calcite, serpentine, feldspar, hornblende, slate and granite. As far as the sites in the Siwalik piedmont of Panjab are concerned, Kotla Nihang Khan near Rapar measures about 2.60 ha, whereas a site like Dher Majra is less than a hectare in area. The extensive or large sites are said to be absent in the Doab region, and Dikshit (1984) reports their average size as being 200 m by 150 m or about 3 ha. These sites mostly occupy the small tributary valleys of the Yamuna in Saharanpur and Meerut districts.

In the light of the assumption that the combined flow of the Indus and the Hakra moved into the sea either in the Rann of Kutch itself or in its neighbourhood, the modern Rann area may be considered as an arm of the sea, and from this point of view, the modern peninsula of Kutch was an island. The first point to be remembered about the Harappan settlements in Kutch is an opinion expressed by Bisht: 'the Harappans brought here their full-blown culture and lived almost a full life before the culture declined and fragmented causing large-scale migration from Kutch to the hinterland of Gujarat and also perhaps Saurashtra'. He further mentions that the Harappan sites in Kutch were unlikely to have been based only on agriculture because, with only 10–15 inches of annual rainfall and a poor soil cover, Kutch is by no means agriculturally prosperous. But at the same time Kutch has potential for the cultivation of cotton and possesses in any case good grazing land. As Bisht (1989: 267) puts it:

People find the livestock farming much profitable in order to offset the usual agricultural deficit. It is why the livestock are one-and-a-half times the human population. The Kutch cattle was held in esteem even in the time of Panini. Horses and camels were highly prized in the medieval times. Herds of the cows, buffaloes, camels, sheep and goat make a common sight everywhere in Kutch. Study of archaeological remains from excavations may produce relevant information in this regard.

There is no firm evidence of Harappan trading activities on the Kutch seaboard (till the summer of 1992 Bisht found nothing at Dholavira which could be interpreted as evidence of a long distance trading contact). However, Kutch could be an area of resource procurement, in addition to being a major area of animal breeding and cotton cultivation. I have already noted that at Khandaria, Bisht (1990: 267) found evidence of the extraction of chert, carnelian, agate and jasper.

Although they are semi-arid areas like Kutch, the Saurashtra peninsula and mainland Gujarat have a much better soil cover and more flowing streams, in addition to having a better rainfall and some major raw materials—semi-precious stones, marine shells, copper, steatite, ivory, amazonite, gold, different types of ordinary stones, etc. (Lahiri 1992: 81, 106 ff). Besides, Gujarat has good potential for the cultivation of cotton. It has been argued that cattle-farming was a major component of the region's Harappan economy. That some of the Harappan sites in the region were geared to the procurement of raw materials has been documented at such sites as Nageshwar which was apparently devoted to the collection of those varieties of shell which were used for bangles, conch-shells, etc. Another site, Nagwada, has been interpreted as a major manufacturing centre of semi-precious stone objects. Although the discovery of a Persian Gulf seal at Lothal and a seal with a whorl motif at Dwaraka suggests maritime contact with the Gulf region, the evidence is not in any way widespread.

On the whole, it is clearly indicated that the basic character of these settlements was conditioned by factors such as local agricultural geography, distribution of raw materials and the alignment of inland trade routes. A detailed study of the location of Harappan settlements from these points of view may be a fruitful exercise.

Chronology

The first attempt at establishing a Harappan chronology came from John Marshall (1931, i: 102–7) who placed Mohenjodaro between 3250 and 2750 BC and suggested a considerable margin on the earlier side to account for the growth of the civilization itself. I have earlier pointed out that at Mohenjodaro, on the basis of his excavations between 1922 and 1931, Marshall distinguished, besides an earlier unexcavated deposit, three occupational levels or what he called 'strata', phased into Early, Intermediate and Late, and estimated to be of a duration of five hundred years after an allocation of 'two generations apiece'. To put these five

hundred years within an absolute chronological bracket he referred to two Indian type seals from Mesopotamia, supposedly found in the pre-Sargonic contexts of Ur and Kish and dated in the light of the contemporary Mesopotamian chronology as pre-2800 BC. In view of the lack of any specific evidence these seals were attributed to the Mohenjodaro 'Intermediate Strata' on the Indian side and it was on the basis of this cross-dating that the Mohenjodaro excavated deposits were placed between 3250 and 2750 BC.

In 1938 Mackay (vol. 1: 6-7) put the duration of Mohenjodaro between 2800 and 2500 BC, a meagre three hundred years for his nine excavated 'strata' (with two sub-periods for the topmost one) which, he thought, was possible because of the rapidly crumbling nature of the Mohenjodaro bricks. He based his determination of the upper limit on the occurrence of a cylinder seal 'obviously of Indian workmanship' with its elephant, rhinoceros and fish-eating crocodile, in the Sargonic or Akkadian context, dated by him around 2500 BC, of the Mesopotamian site of Tell Asmar. Correspondingly he noted that the cylinder seals occurred rarely at Mohenjodaro and that too only in its upper levels. To suggest the earlier limit he referred to the find of a greenish chlorite-schist vessel in an early context (28.1 ft below datum) at Mohenjodaro. The vessel had on it a carved matting pattern which could be duplicated at Susa II in Elam tentatively dated around 2800 BC.

To sum up, these two data-schemes of Marshall and Mackay were based on an arbitrary estimate of the duration of Mohenjodaro which varied from Marshall's 500 to Mackay's 300 years, an explicit belief in the pre-Sargonic Indus valley-Mesopotamia contact and the adoption of a Mesopotamian chronology which has since then been brought down. For instance, to Marshall (1931, 1: 104) the pre-Sargonic period meant pre-2800 BC whereas the date of Sargon of Akkad is now generally considered to be 2371 BC.

A date-scheme for the Harappan civilization as a whole, c. 2500-1500 BC was proposed by Wheeler (1947: 78-83) and was the point of departure for any discussion on the Harappan chronology for many years. In the mass of evidence suggesting the contact of the Indus valley with Mesopotamia Wheeler could find nothing that could be securely dated before the Sargonic period itself brought down from Marshall's 2800 BC or Mackay's 2500 BC to 2350 BC. This, however, did not suggest that the Harappan civilization was non-existent before the Sargonic period. It only implied that by the Sargonic period the civilization was mature enough to come in contact with Mesopotamia by way of trade or other

wise. Allowing about 150 years for its period of gestation Wheeler dated its beginning around 2500 BC. The end-point of his estimate, 1500 BC, was based on two assumptions: (1) the destruction of the Harappan civilization by the Aryans, a hypothesis based primarily on the Rigvedic references to the fort-destroying activities of the war-lord Indra and the evidence of some amount of insecurity in the late Harappan phase itself, and (2) the conventional date of 1500 BC as that of the coming of the Aryans to India. The first of these assumptions was borrowed by Wheeler, without specific acknowledgement, from R.P. Chanda's monograph on the survival of the Indus civilization (Chanda 1929).

In the early sixties the newly obtained radiocarbon dates were first assessed by D.P. Agrawal (1964). On the basis of the dates obtained from the Harappan levels of Kalibangan, Lothal, Rojdi, the late period Mohenjodaro, and those of the relevant levels of Damb Sadak, Nan Buthi and Kot Diji, he put the chronological range of this civilization between 2300 and 1700 BC. Two major developments have taken place since then. First one has to take into consideration the factor of calibration. For instance, an uncorrected radiocarbon date of about 2300 BC offers a calibrated date-range of 2900-2600 BC, based on a single plus-minus variation. If the variation estimate is doubled, one certainly gets a far more probable range, but at the same time, the range becomes very wide. One is not sure if the selection of a mean fixed point in this range by following a particular computer programme or calibration method is a less reliable or even acceptable exercise from the archaeological point of view. There is no reason to believe that this increases the probability range of the calibrated dates (for an example of such an exercise in the Harappan context, see Possehl 1991; for a list of the Indian dates in general, see Possehl 1989, 1992, Shaffer 1992). Moreover, there has been a great increase in the number of dates from the Harappan and related sites and it is important to examine these dates to see if they are internally consistent in the light of the established archaeological sequence of all these sites. It has also become imperative to judge if the available dates are representative of the areas and levels of this civilization. On the other hand, it appears that the archaeological interpretation of the radiocarbon dates is almost as important as the laboratory procedure to obtain them. Secondly, the issue of cross-dating with Mesopotamia is much clearer. There is virtually no doubt at all that two distinct Indus bead types were reaching Mesopotamia in Early Dynastic IIIA (c. 2600-2500 BC; Crawford 1991: 446-7). These beads were not manufactured before the beginning of the mature Harappan period. There are also

other categories of data showing Indus-Mesopotamia contact in the pre-Sargonic period (Chakrabarti 1990). There cannot really be any doubt that by c. 2600 BC the Indus civilization was already in existence. One may, thus, put the date of its very beginning around c. 2700 BC, if not earlier. This simple historical argument based on cross dating with Mesopotamia does not leave much scope for jugglery with radiocarbon dates. In fact, the MASCA calibration of dates led J. H. Brunswig (1978) to argue that the mature Indus civilization had its first stage around 2800 BC. One of the reasons why this argument has put off some scholars in the field is the fact that this will put the beginnings of the Early Dynastic Civilization of Mesopotamia and the Indus civilization of south Asia on the same chronological level. To these scholars it is not at all an attractive proposition.

One fixed point in the radiocarbon chronology of the Indus civilization is provided by the five radiocarbon dates from the upper levels of Mohenjodaro. When calibrated, all of them point to 2200 BC for these levels. So, by c. 2200 BC Mohenjodaro was on the decline. How long should one estimate its earlier duration to be? Even accepting Jansen's idea that Mohenjodaro was conceived and built within a comparatively short period, as the deliberate construction of high mud and mudbrick platforms all over the habitation area may indicate, there is no special reason to infer that the city outlived its utility and went into decline soon after it came into existence. It may be useful to remember at this point that there is a piece of direct evidence showing contact between Mohenjodaro and Early Dynastic Mesopotamia in the form of an interculturally stylized chlorite vase fragment associated with the lower levels of Mohenjodaro (Chakrabarti 1990: 110 ff).

The other end of the scale is provided by the finds of Indus seals in the Kassite contexts at Nippur and Fialaka, bringing down the evidence of Indus contact with Mesopotamia and the Gulf to c. 1400 BC and later (Chakrabarti 1990: 112). A number of radiocarbon dates also suggest the continuation of the Indus civilization till about the middle of the second millennium BC and later. The Indus civilization, thus, covered not merely a large geographical territory but also a large segment of time.

As far as I have been able to understand it, the Indus civilization had its origin in the Cholistan tract on the bank of the Ghaggar-Hakra course. A short time after this took place, the civilization spread across the Hakra-Indus doab towards Mohenjodaro and other places in Sind. I am not sure when the spread towards Harappa along the Ravi took place. My inference, based on the bulk of the radiocarbon evidence, is that this took place

sometime after 2500 BC. It is interesting to observe that the general range of calibrated dates from the level of the Indus civilization at Harappa is roughly 2400, 2300 BC and 2100/2000 BC (Dales 1992). I suggest that this expansion, and also the expansion towards Rajasthan, Haryana and Punjab took place after the phase of expansion towards the lower Sind. The dates from Kalibangan show a similar radiocarbon dating spread. Along with the movement towards the lower Sind there was in all probability another movement towards Kutch which was then likely to have been an island and lay virtually at the mouth of the combined Hakra-Indus flow. In fact, if one takes into consideration the Rajasthan-Punjab-Haryana sites, the distribution of the Indus civilization sites shows the most dense concentration along the Ghaggar-Hakra course at three points—in Cholistan, along the Sirhind *nala* which is a part of the Ghaggar-Sarasvati system in the Bhatinda area, and in Kutch in the estuary of the combined Ghaggar/Hakra-Indus flow. The movement towards the Saurashtra peninsula and mainland Gujarat took place from Kutch, possibly in a somewhat later period. The long chronology of the Indus civilization becomes meaningful in the light of the geographical hypothesis suggested above.

Elements of Planning

Among the hypothesis thrown out of gear by modern research on the Indus civilization is the premise that its cities are based on chess-board patterns. The roads do not always move straight, nor do they cross cross at right angles. At the same time there is clear evidence of centralized planning at all the major excavated sites. This is clear from the physical configurations of the individual settlements, the way in which the two separate and separately enclosed mounds stand in relation to one another, the way in which the fortifications and/or enclosure walls were laid out with bastions, corner towers and entrances, etc. The available basic settlement types suggest a detailed concept of typology for them. First, there are settlements like Mohenjodaro, Harappa and Kalibangan where the twin mounds are separately enclosed and suggest a clear division between the public administrative cum ritual cum residential western sector and the more or less private residential sector. The western mound at Harappa is badly disturbed but it has some major public constructions in the middle, outside, between the northern fortification wall and the river. At Mohenjodaro there is no structural complex in the shadow of the *aditya* whereas at Kalibangan the western mound has two separate

walled sectors, one apparently kept apart for a number of ritual platforms and the other presumably meant for administrative buildings and the dwellings of the elite. Secondly, there are places like Surkotada which is a replica of the western sector at Kalibangan. Third, there is Lothal which shows a single enclosed complex with public buildings and ordinary residential structures including craftsmen's workshops. Fourth, although within a single enclosure wall, a place like Banawali had two internal and walled subdivisions, but the alignment of the dividing wall between Banawali's 'acropolis' and the 'lower town' gave the acropolis an arch-shaped asymmetrical form. Fifth, Dholavira constitutes a category of its own because its open spaces and triple divisions between the lower town, middle town and the citadel have not yet been matched at any other settlement. Sixth, there must be some small but presumably urban settlements (cf. Ahladino, Hulas?) which had no internal divisions and no enclosing wall. Finally, there are places like Zekada in Gujarat which are presumably short-lived and seasonal habitations.

Another fact which needs consideration at the outset is that there is no direct correlation between the planning of the Indus settlements and their size categories. A convenient example is the contrast between Lothal and Mohenjodaro. In the light of the data cited in 1979 Mohenjodaro is about 18 times the size of Lothal, but Lothal shares with it the features of burnt brick houses, regularly aligned streets, burnt brick drains, etc. On the other hand, Kalibangan is more than twice the size of Lothal but is much poorer in comparison. At Kalibangan there is very limited use of burnt bricks, civic drainage and wells, among other things. So, mere size in the Indus context does not indicate whether the site was rich or poor, properly planned or unplanned. Thus, on the whole, the distinction between a village, a town and a city is to some extent blurred among the Harappan settlements. In the same context it has to be emphasized that not all major Harappan settlements have a number of smaller settlements around them. Both Mohenjodaro and Harappa are classic examples. There is no concentration of lesser settlements in their neighbourhood. On the other hand we have the curious phenomenon of a large number of sites of all sizes being concentrated in some pockets. One simply does not know what to make of the singularly unusual concentration of five sites, each apparently as large as Mohenjodaro and Harappa in the Mansa area of Bhatinda.

A number of estimates have been made regarding the population density of the Harappan cities. On the basis of his estimate of the quantity of grain stored in the granaries, which, he thought, was only for general civic consumption, Jatindra Mohan Datta (1962) calculated that the

density of population per acre at Mohenjodaro and Harappa was 52 and 73 respectively, giving a total population of 33469 for Mohenjodaro and 37155 for Harappa. But the idea that the stored grain was meant only for civic consumption may be wrong, it may have also served as some kind of capital. Allowing a ratio of 800 square feet per person, Fairservis (1967) puts the total population of Mohenjodaro at 41250 persons on a conservative estimate. On the basis of nineteenth-century statistics figures for Shikarpur in northwest Sind, which, according to him, in dimensions and lay-out may be reckoned as approaching the conditions of Mohenjodaro as nearly as possible, Lambrick (1964) estimates the population of Mohenjodaro to be 35000 and feels that the same figure should be true of Harappa as well. If one accepts that the size of Mohenjodaro is double the size of what can be seen today or that Harappa measures 150 ha in area, the population estimates should also go up accordingly.

Another issue related to Harappan planning is to decide if the walls which enclose in some cases the 'citadel complex' and the 'lower town' separately and the settlement as a whole in others are regular defence walls or merely serve the purpose of demarcating urban territories by peripheral walls. Whereas, after his excavations at the citadel mound of Harappa, Wheeler had no doubt at all about their being components of a military system — and his work at Mohenjodaro in 1950 only reinforced his belief — some doubt has been expressed about this in recent years (cf. Kesarwan 1984, Kenoyer 1991). The basis of this doubt is two-fold. First, as A. Kesarwan, (1984) has argued, the entrances to the Harappan fortified enclosures were not at all elaborate and contrasted sharply with the gateway complexes of an ancient Mesopotamian city.

The fortified Harappan towns were of two kinds: some had simple entrances, while others had guard rooms also, but the guard rooms were invariably very small to accommodate only one person. Some of the Harappan 'citadels' such as those at Surkotada and Kalibangan had partition walls which also had simple entrances, sometimes with steps, but apparently without guard rooms. The fortifications therefore served two major purposes, as protection against floods and as the mark of social authority over the territories commanded. Kesarwan (1984: 3).

Secondly, such walls came up, at least in the case of the western mound at Mohenjodaro, as the retaining wall of the huge artificial mud and brick platform, on the top of which individual buildings, both public and private, stood on their own substructures. This has also been argued in the context of the eastern mound at Harappa, 'while some parts of the walls may have been free-standing and associated with an entrance, other

parts served as massive revetments raised up to 3 m against the edge of the mound' (Kenoyer 1991: 352). At the same time I feel that no useful purpose is served by completely running down the defensive character of these walls. When the bastions, corner-towers and gateways are envisaged together, the 'defensive' character of such complexes becomes very hard to deny. Moreover, as Jansen has argued, there is also an element of a moat associated with it. The clay necessary for the raising of the huge platforms, substructures and the retaining wall was likely to have been collected from the same area and this must have given rise to a ditch around the peripheral wall. In a sense this is reminiscent of early historic cities where a fortification and a moat were common features.

Unless the distribution of artifacts is detailed house by house and room by room it is unlikely that positive clues will be found as to the use of excavated house units at any Harappan site (Jansen 1984, for a statement of this issue), but by mainly studying the position of the courtyard in relation to the other rooms Anna Sarcina (1979) proposed five basic models for the house-units of Mohenjodaro, which she illustrated by using different colours: yellow model—courtyard always to the north, red model—courtyard in one corner surrounded by rooms on two sides, green model—a central plan with the courtyard surrounded by rooms on four sides, brown model—courtyard occupies about half the area, with the rest divided into several rooms, blue model—courtyard surrounded by rooms on three sides. Each of these has been assigned various sub-categories, but what is important in Sarcina's scheme is the following: yellow model for residential purpose, red model with a residential purpose but with an artisanal dimension as well, brown model for artisans, green model also with functions other than residential ones, blue model for an uncertain purpose.

Jansen's (1984) classification envisages three broad categories at Mohenjodaro, the units oriented towards a central space and with a blocked-out view of the entrance from a street or lane, large houses surrounded by smaller units, and large public structures such as the Great Bath, Granary, etc.

Among the streets the main ones at least were of considerable width. The north-south First Street in the HR area at Mohenjodaro was 30–5 ft (9.14–10.66 m) wide and as Mackay (1948: 19) points out, 'could easily have accommodated several lines of wheeled traffic'. Among the lesser ones a width of around 13 ft (3.96 m) is supposed to be common. At Kalibangan the average width of the major streets has been calculated to be around 7.20 m and the width of the smaller ones is generally supposed

to be half of this. At Lothal this varied between 12 and 18 ft (3.65 and 5.48 m). The lanes were considerably narrower. At Mohenjodaro their width ranged from between 3 ft 8 ins (1.11 m) and 7 ft (2.13 m). At Kalibangan their average width is 1.8 m, though in some cases it is so narrow that one can easily stride across them. At Lothal they were between 6 and 9 ft (1.82 and 2.74 m).

The streets are not constant in their width. A careful glance at the published plans should show this but to take one example, one of the major streets (the second one from the left) in the lower town of Kalibangan is about 6.15 m wide at its northern end while at the southern end its width is about 8.20 m. These variations in width notwithstanding, the streets ran remarkably straight, the eye moves down from one end to another in one sweep. The variations have been generally attributed to a lack of precise measurements rather than to carelessness, but this seems somewhat improbable as the differences involved are far too large in some cases. The inner lanes, as the plans show, seldom ran straight but often twisted and turned. But even then the bends were not rounded but right-angled. The Harappan planners seem to have been preoccupied with straight lines and sharp corners. Curiously enough, such well laid-out streets and lanes were invariably unpaved (except for a stretch of the First Street in the DK area, Mohenjodaro, and the evidence of terracotta nodules on the streets in the upper levels of Kalibangan).

The most distinctive feature of the Harappan streets and lanes is perhaps the number of burnt-brick drains associated with them. The drainage system seems to have been quite extensive, at least at Mohenjodaro and Lothal. At Mohenjodaro where the evidence is fully published, there are drains in all the larger streets and more often than not in the smaller lanes also. They were primarily intended to carry off the waste household water and connected as such in most cases through a water chute with the smaller drains of the houses. The idea that they were intended to cope with the rain water is doubtful. In the context of Mohenjodaro, Raikes and Dissanayake (1961: 277) show how 'the drainage system is inadequate to carry off the storm water from an average present day short period storm'.

The width and depth of the drains varied. At Mohenjodaro the general width might be around 9 ins (about 228 mm) while the usual depth was between 18 and 24 ins (0.45 m, 0.60 m). From the regular deposits of little heaps of sand beside them Mackay (1948: 36) infers that they were subjected to regular cleaning. Stone slabs or bricks were put as covers over them in such a way that they could easily be removed for the purpose of cleaning. The general masonry of the drains was careful and the bends

were carefully rounded so that the general flow of water was not impeded at any point. Besides, brick culverts, 'some as large as two and a half feet wide and between four and five feet high' (Mackay 1948: 37) and meant for the discharge of the collected water from the city-drains, have been reported from the outskirts of Mohenjodaro.

For the sewerage there were not only drains but also soak or sediment pits in places. Sometimes they were mere pottery jars placed at the mouth of the water chutes coming out of the houses. Usually there was a hole at the bottom of the jars to let the water sink into the earth. The proper sediment pits, of which a number of examples come from Mohenjodaro, were brick built and even had steps leading inside, allowing access for cleaning. Drains, soakage jars and cess pits are also said to be the normal features of the streets at Lothal. In the context of a public drain at Lothal, it has been said that 'to ensure a quick flow of water in the drains, drops were provided at regular intervals on its brick floor. Another interesting feature was the provision of a sluice gate at the mouth of the drain, where a wooden door could be slid in grooves' (IAR 1958-59: 14).

A point which may be of some interest is that there is no system of street drainage at Kalibangan, though soakage jars were occasionally placed outside to hold water from the house drains of wood or brick. In view of this it is tempting to link the Harappan system of drainage with the general material standard of the city. Kalibangan, if its uniformly mudbrick built houses and comparative paucity of finds are any indication, seems to be a poorer city than Lothal or Mohenjodaro.

A large number of burnt brick built wells seem to have been a rather organic feature of Harappan civic planning. It is from Mohenjodaro that one gets the most extensive evidence. Of course, as Mackay (1938: 165) points out, 'not every house had its own well; for instance, there were none in certain houses cleared in Block 2, 3 and 5 in the southern portion of the DK area, G section, nor in several blocks in the northern portion'. The inside diameter of the wells varied between 2 ft and 7 ft 6 ins (0.60 m-2.28 m). Mackay notes that the usual size is 2 ft 2 ins (0.66 m). In some cases this is as low as a little more than 1 ft (0.30 m). Usually round, the wells were sometimes elliptical. The well in Block 6, SD area (Mohenjodaro) is one such instance. In most cases the wells lay within the house but occasionally they were placed between two houses. The latter was probably intended for public use; in fact, the paved portion around them contains many low circular impressions, apparently due to the regular placing of many jars. 'In two instances brick benches were built around the well for the use of people awaiting their turn to draw water' (Marsden

1931: 270). Or, as Mackay (1948: 38) writes, '... the sight of a knot of people gathered round a well waiting their turn to draw water and exchanging gossip meanwhile must have been as common in Mohenjodaro as it is in the East today'. As their steining was raised from time to time, the wells seldom went into disuse. The wells occur at other sites also but they are rare in the eastern mound of Kalibangan where the river lapping the site in the north must have been the main source of water supply.

Jansen (1989) adds that the wells were made of specially designed, wedge-shaped bricks.

From the technical point of view, the cylindrical well shafts are an impressive feat of engineering as they bear out the fact that the circular form is statically best suited to withstanding the lateral pressure bearing on wells 20 m or more deep. An average catchment radius of a mere 25 m per well has been estimated for Mohenjodaro on the strength of the available data. Mohenjodaro must have been serviced by at least 700 wells, with an average frequency of one in every third house. Needless to say, a water supply network on this scale within the actual city itself was unheard of at this period. Contemporary Egyptians and Mesopotamians, for instance, had to make do with fetching water bucket-by-bucket from the river and then storing in tanks at home in the city until needed (Jansen 1989).

Like the streets, drains and wells the Harappan houses also impress one first with their general uniformity. Wood must have been used extensively along with brick, in the 1964-65 excavations at Mohenjodaro, considerable evidence was found for the combined use of baked brick and wooden architecture. Wooden beams, sockets, recesses in brick wall faces for wooden beams and a series of regularly spaced vertical slots in the outer surface wall of one building point to the use of wooden architectural components on a scale much more extensive than had hitherto been realized' (Dales 1965). Remains of staircases, usually steep and narrow, suggest in some cases an upper storey. The roofing was of mud plastered reed matting supported by timber. The plastering was normally of clay, occasionally burnt patches of which still survive. The mortar used was also clay though the use of gypsum and lime was not unknown. The paving inside was either of beaten earth or bricks, both burnt and unburnt. Only the floor of one room at Kalibangan was found paved with tiles decorated with intersecting circle designs. Two more examples of this type of decoration come from Bala Kot and Ahladino. The doorways were simple, probably wooden and closed against jambs. Mackay (1948: 28) gives the usual width of a doorway at Mohenjodaro as 3 ft 4 ins (1.06 m). Their sizes are generally mentioned 3 ft 3 ins

(0.90 m), 3 ft 6–3/4 ins (1.09 m) and 3 ft 10 ins (1.16 m). At least one doorway in the HR area was as wide as 7 ft 6 ins (2.28 m). This one was corbelled though the normal method was to top the doorway by a wooden lintel. Door sockets were of hollowed out stone and brick. The entrance doors usually opened into the side-lanes and alleys and rarely into the main streets. The windows are noticeably rare; 'even in some of the better-preserved blocks (of Mohenjodaro) they can be counted on the fingers of one hand' (Marshall 1931 i: 275). They must also have been placed high up in the walls. The primary source of light inside the house must have been the inner open courtyard.

A distinctive feature of the houses is bathrooms and privies. The bathrooms—carefully paved, sometimes with bricks on edge and with a waterchute or drain (in the cases of bathrooms upstairs, pottery pipes) to carry off the waste water, were almost an invariable feature of the Mohenjodaro houses. On the other hand, the privies—two bricks placed sideways with a hole in between—were less common. A general hypothesis (Marshall 1931 i: 282) is that the large number of bathrooms at Mohenjodaro suggest almost a ritualistic value for ablution. This may be true but in view of their rarity at Kalibangan one might contend that the bathrooms may well be mere reflections of the richness of the city and the general habit of cleanliness of the citizens.

Finally, following Jansen (1991), one may point out a major implication of the constructional feature of the western mound at Mohenjodaro. This entire sector covering more than 80,000 sq. m was laid out on a 7 m high artificial mud and mudbrick platform, and according to Jansen (1991), this 'huge substructure could have been erected in two winter seasons by approximately 20,000 people'.

Social Framework

The Harappan settlements functioned within the political and administrative framework of a state. There is no clear formulation of the problem in the earlier reports of Marshall, Mackay and Vats, though they all seem to have accepted the existence of priests, merchants and artisans among the people who lived in these cities. Gordon Childe (1952: 21–28) wondered about the 'nucleus round which accumulated the social surplus wealth of capital involved in the conversion of the village into the city' and wrote in this context of 'a democratic bourgeois economy as in Crete'. Wheeler, on the basis of his discovery of the fortification around the mound AB at Harappa, wrote the following: 'Whatever the source of their

authority—and a dominant religious element may fairly be assumed—the lords of Harappa administered their city in a fashion not remote from that of the priest-kings or governors of Sumer and Akkad' (Wheeler 1947: 76). An Egyptian or Mesopotamian type of kingship need not be envisaged in the Indus context. In later Indian history, the king, despite the occasional use of grandiloquent titles, was a much more humble figure without the tell-tale archaeological evidence of his existence. For one thing, he does not strut around in sculptural reliefs towering above ordinary mortals and cutting the heads of his enemies, and for another, he functioned within the well-formulated concept of the royal duty of looking after the well-being of his subjects. Has any palace been indisputably identified in the excavations of the later cities of India? The answer is in the negative. The point I am trying to make is that it is futile to look for the remains of a royal palace in the ruins of Mohenjodaro and elsewhere for the simple reason that there will not be any way of identifying it, going by the later Indian examples. Priesthood is far more sharply visible in the Mohenjodaro archaeological record. The concept of a *vox m*, one who sits in meditation, is writ large over the famous Mohenjodaro limestone head and a few miscellaneous pieces of human sculpture from the same site. Remains, such as those of fire altars on the tops of platforms at Kalibangan, and similar remains elsewhere, though without the association of high platforms—unmistakably imply the services of priests—priests of a type that a practising Hindu would engage for performing his household rituals even today. Many laboured hypotheses have been offered to explain the components of the Indus religion, but John Marshall's explanation of the Indus religion has not yet been bettered, mainly because Marshall with his roots firmly in the ground had no necessity to suggest pointless and laboured hypotheses. Merchants must have played a major role in the social and economic life because the overwhelming evidence of raw material procurement all over the Harappan distribution area leaves no room for doubt on this score. This is true of artisans, and one need not be surprised if both the merchants and artisans had their 'guilds' as early as in this period.

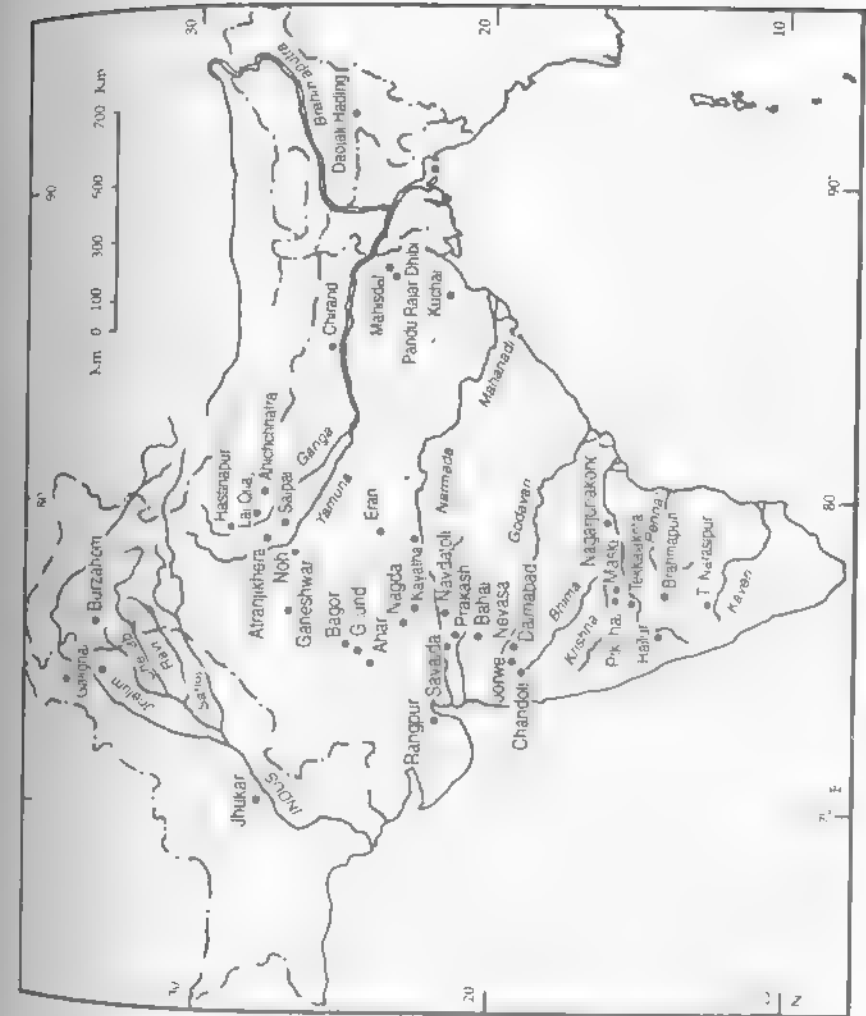
Chapter Four

Prelude to Early Historic Urban Growth

DECLINE OF HARAPPAN CIVILIZATION

The first systematic discussion on the decline of the Harappan civilization was made by Wheeler (1947) who depended, on the archaeological side, primarily on the fortification wall around the western mound at Harappa. In its Phase III, the last period of Harappan occupation, one of the two entrances of its western gate system was blocked completely and the other was partially closed by a screen wall. In the same phase an additional salient was added to its northwestern corner tower. These archaeological indications were interpreted as signs of the Harappans being on the defensive and thus, on the decline. The Rigveda provided the literary data with its wealth of references to the fortified strongholds of the non-Aryans and the tale of their destruction by the war-lord Indra. On the basis of Marshall's (1931, p. 110-11) postulate of the non- and pre-Aryan character of the Harappan civilization and the discovery of a fortified stronghold at Harappa it was not difficult to imagine that the Rigvedic section of the destruction of fortified settlements contains a reference to the destruction of the Harappan cities by the Aryans. The hypothesis seemed to fit in with an additional piece of evidence from Mohenjodaro: the scattered skeletons of men, women and children in the upper levels of the site, which were interpreted as signs of a massacre, a likely enough phenomenon in case of an Aryan attack. If these Aryans needed any specific archaeological identity, it was provided by the 'Cemetery H' people at Harappa who built jerry-built walls on top of the Harappan occupation at the citadel and seemed generally to linger at the site after the passing of the Harappans.

The theme continues in Stuart Piggott's *Prehistoric India* (Piggott 1950: 214-41). He suggests, in addition, a 'time of trouble' and a post-Harappan infiltration from the West into Baluchistan, Sind and the North-west Frontier, deducible from a motley of archaeological evidence, the



Map 4: General distribution of sites mentioned in Chapter 4

burnt-out deposits over Rana Ghundai IIC (north Baluchistan) marking a complete break with the previous settlement, at Nal over the Nal cultural deposit and at Dabarkot (north Baluchistan) over the Harappan occupation level, the Shahi Tump cemetery (south Baluchistan) with its shaft-hole axe, copper compartmented seals and grey pottery, all having parallels in the West, a post-Harappan culture at Chanhudaro known as the Jhukar after the name of the type-site in Sind where shaft-hole axe and copper compartmented seals occur again besides a few spiral-headed pins, stone and faience stamp seals; the shaft-hole axe-adze from Mohenjodaro, the trunnion celt from Kurram (Northwest Frontier) and the dagger from Rajanpur (Northwest Frontier)

There was reaction to the theme as early as in 1953, when B.B. Lal (1953: 88), primarily on the basis of the intervening debris between the Harappan occupation level and the jerry built structures associated with the Cemetery H pottery on top of the citadel at Harappa, pointed out that the Harappans and the makers of Cemetery H ware could not be contemporary at the site and thus it was unlikely that the latter had any role in the destruction of the former

In 1964 George Dales summed up his attitude to the suggested 'massacre' at Mohenjodaro, an important prop in the argument of Wheeler

The contemporaneity of the skeletal remains is anything but certain. Whereas a couple of them definitely suggest a slaughter *in situ*, the bulk of the bones were found in context suggesting burials of the sloppiest and irreverent nature. There is no sign of an extensive burning, no bodies of warriors clad in armor surrounded by the weapons of war. The citadel, the only fortified part of the city, yielded no evidence of a final resistance (Dales 1964: 43)

In the same context Wheeler held on to his theory (Wheeler 1968: 131), which was reinforced by the further recovery of skeletons in 1964-65, although Dales (1965), the excavator, pointed out that the skeletons were found in debris and not on a street or at floor-level. 'Certainly no fuel has been added by the new discoveries to the fires of the hypothetical destruction of the city by the invaders.' However, it must be acknowledged that even before the publication of Dales' article, the situation was summarized by A. Ghosh (1962): 'Our view is that nothing that has been said and excavated till now established any connection between the Harappans and the Aryans at any stage.' As late as in 1968, B. and F.R. Allchin (1968) wrote '... the numerous groups of hastily buried or unburied corpses left in the streets of its final occupation, and the buried hoards of jewellery and copper objects seem testimony enough of the proximity of foreign

barbarians.' The idea of 'foreign barbarians' putting to sword a civilization in its last stage seems to be too appealing to be abandoned

Meanwhile, in the context of Sind a new line of enquiry was put forward by M.R. Sahni (1956). In connection with his geological fieldwork in 1940-41 he noted the presence of thick bedded alluvium on Budh Takkar and another hillock near Thirak, south of Hyderabad in Sind. The bedded character of the alluvium containing freshwater shells like *Planorbis*, *Viviparus*, *Symnaea*, besides *Unionids* suggested a prolonged submerged condition, sometime between the Harappan and post-Harappan phases as indicated by a thick cover of alluvium over at least two Harappan sites noted by him in the vicinity.

The floods may have been due to earthquakes causing elevation, perhaps at more than one point, which dammed the Indus course, or to simultaneous floods in the Punjab rivers which ultimately pour into the Indus. Attention is drawn to the 'Allah Bund' or Mound of God, a barrier 50 miles long, 20 miles wide and 10-26 feet high, formed in Kutch as the result of an earthquake in 1918 when an area of 2000 sq. miles was submerged for a period of two years. Furthermore, in 1826, the Indus burst every dam in its course, covering for itself a passage through the old channel discharging into the Koree Creek and overflowed the Sind desert. The author suggests that there were earlier episodes on a vaster scale in the destructive history of the Indus, the cradle of early Indian civilization.

Primarily two categories of evidence led Raikes to the same line of enquiry in his first publication on the subject in 1963:

For a long time the author has found it difficult to accept the explanation that the nine rebuildings of Mohenjodaro and the several rebuildings of Chanhudaro were occasioned by floods in the ordinarily accepted sense of the word. The greatest depth of 'flood-silt' shown in the early available, perhaps the only published stratigraphy of Mohenjodaro, is too great to be easily accounted for by an exceptional annual Indus flood... in some places reconstruction on top of the existing wall has started some six feet above the previous floor level (Raikes 1963: 657)

Secondly, evidence of a major coastal uplift was forthcoming from Makran with the suggestion that it was on too vast a scale to be restricted merely to the Makran strip and to not have affected the flow of the Indus

Although put in a more elaborate form in 1964 (Raikes 1964), Raikes' thesis assumed a clearer focus only after his field study was aided by boring in 1964-65 (Raikes 1965). The total accumulated depth of the silt was some 70 feet (c. 21 m), about 10 m above the plain and another 12 m below, as the borings revealed. The content was found to be 'silty-clay', the

result of deposition under still water condition. Raikes considered it improbable that such a vast accumulation of silt could be explained by the normal flood regime of the Indus. He suggests that the still-water condition necessary for the deposition of silty-clay could be possible only due to the emergence of a lake south and downstream of Mohenjodaro. A dam athwart the Indus to account for the formation of such a lake could come up due to a sudden tectonic disturbance throwing up an effective mud barrier. The inherent probability of such a dam with a tectonic disturbance in the background might be supported by a reference to the Allah Bund which Sahni cited and to the eruption of two mud islands off the coast of Sind in the Arabian sea as late as in 1945. 'It seems inescapable that an event or a series of events such as that of Allah Bund, and probably due to intruded volcanic mud, dammed the Indus' (Raikes 1967: 182).

Such a dam for which suitable geological formations are said to exist near Sehwan, some ninety miles downstream of Mohenjodaro, would have been permeable in character because the erupted volcanic mud would also have thrown up the original fine sand with a thin alluvial sandy clay cover of the original flood plain. This permeability would have entailed that while the dammed-up water could gradually seep through, the whole of the sediment load would have got deposited at the bottom. From the point of view of the human inhabitants of the area it would have meant a gradual engulfment of their settlements in mud. The people of Mohenjodaro would have tried at the outset to raise their houses higher and higher on mudbrick platforms till at one point the endeavour would have seemed useless enough to warrant the desertion of the city. Eventually the water accumulating behind the dam would have spilled over it and thus initiated a process of headwater erosion, which in turn would have exposed the part of Mohenjodaro visible above the flood plain today (the entire cycle illustrated by a diagram in Dales, 1966).

Apart from the different ramifications of Wheeler's idea (Wheeler 1968: 113) that Mohenjodaro was wearing out its landscape by over-exploitation, the first major criticism of the 'dam-and-lake' theory came from H. T. Lambrick (1967a, 1967b). He maintains that the present flood plain of the Indus is the result of the unimpeded alluvial action of the river in its natural condition with its characteristic change of course over several thousands of years. He questions the validity of Raikes' estimate of the existing slope of the flood plain at 1 in 7000 and of the slope during the pre-Harappan time at 1 in 3500. He also has doubts about both the factors supposedly behind Raikes' reasoning: the presence of the sea near Amri and the flow of the Indus through the Sukkur gorge in a similar

early period. Regarding the latter he says that it is a comparatively recent phenomenon, a fact suggested not merely by the general configuration of the contours but also by the absence of any literary reference to it earlier than the thirteenth century AD. Regarding the ancient shore-line of 3000 BC his guess is that it was about 60 miles inland from the present coast line, 'not far short of one-hundred miles below Amri'. Finally, Lambrick suggests that 'the wind, periodically whipping sand, silt and dust off the surface of the grey-white plain' could have deposited it everywhere in the mound, and melted by rain, it would have been very much like the silty clay that Raikes wrote about. He points out that many village sites have been obliterated like this in Sind.

His positive explanation is that the Indus drifted away from Mohenjodaro, leaving it out of reach of the annual floods. A change in course was *prima facie* possible. Besides, classical geographers like Strabo and Aristobulus have referred to the manner in which a change in the river course brought about the ruin of some areas in Sind. Referring to Sahni's observation, Lambrick argues that the 'silt' on Budh Takkar was a mere debris of man-made mudbrick buildings while on the hillock near Thirak no specific evidence was available. A debate ensued (Dales and Raikes 1968, Raikes 1967a, 1967b) which continued till recently.

In the case of the desertion of sites along the Ghaggar-Hakra course, specifically Kalibangan, Raikes' idea (Raikes 1968), based on the borings at the site and relevant geomorphological and archaeological studies, is that the river Yamuna oscillated, at least from the Harappan age onward, between the Indus and the Ganges river systems. When the Yamuna was within the orbit of the Indus the Ghaggar was perennial and this coincided with the presence of human settlements in the area while the relocation of the Yamuna in the Ganges system would have meant her drying up and thus, the abandonment of settlements. The Harappan habitation along the Ghaggar dried out when the Yamuna made her eastward diversion to the Ganges after a spell as part of the Indus.

I shall offer an explanation, for whatever it is worth, of the end of the Indus civilization in a later section. The foregoing review may have shown how the problem has been viewed in archaeological literature.

The Late Harappans

1. Development of the Idea

The idea that there is a stratigraphically demonstrable and widespread 'Late' phase of the Indus civilization as opposed to the 'Early' phase of a particular site was first expressed by N. G. Majumdar (1934: 154).

A degenerate and therefore, a Late phase of Indus is illustrated by potteries discovered at the upper levels of Jhukar and Lunumjodaro. The old black-on-red technique continued but in a modified style, and a number of new patterns were also evolved. A noteworthy feature is the reappearance of the bichrome style although this new pottery differs widely from the earlier fabric in type as well as design. It is either of terracotta or pale buff colour representing a coarse ware on which the decoration is altogether poor and the number of designs extremely limited. The style can be further studied at the lake-site of Trihni, in its characteristic schematized rosettes. Here, the black on red pottery is totally absent, although there are other links connecting this phase with Indus. Side by side with this painted ware there was prevalent a type of pots with incised strokes at the shoulder, some examples of which come also from the latest levels of Mohenjodaro.

Majumdar pointed out ceramic changes, whereas Mackay pointed out the structural data from the late levels of Mohenjodaro.

The masonry of the Late Period . . . is mostly poor as compared with that of the Intermediate Period. . . . Towards the end of the Late Period, the whole of the southern portion of the G section of the DK mound became an artisan's quarter many of whose inhabitants were potters, for no less than six kilns, including one in the middle of Central Street, were found in this comparatively small area. This quarter of Mohenjodaro if not the whole of the city, must by this time have declined greatly in social standing and organization, for it is difficult to imagine that the city authorities . . . would have allowed potters to practise their craft within the confines of the city. . . . We have indeed, come upon a striking example of the decay of an once honourable city, the cause of which we suspect to be the vagaries of the Indus rather than pressure by invaders, of whose existence we have in fact little positive evidence (Mackay 1938: 6).

There are seven dates from the upper levels of Mohenjodaro, the calibrated versions of which fall comfortably between c. 2500 and c. 2100 B.C. This spread also serves the purpose of demonstrating that at Mohenjodaro the Indus civilization could have come to an end at least a couple of centuries earlier than 2000 B.C. The evidence of post-Harappan occupation in Sind came from Jhukar and Chanhudaro where the Jhukar culture as a post-Harappan culture was identified. In Panjab the post-Harappan occupation was seen limited to the Cemetery H ware culture identified at Harappa.

The idea that there was a continuing tradition from the earlier 'mature' urban Harappan level to the late level has been strengthened by a large number of discoveries. First, S.R. Rao's survey and excavations at Rangpur and Lothal in Gujarat established the continuity of occupation from the mature Harappan Rangpur IIA to the lustrous red ware phase

of Rangpur III through Rangpur IIB and IIC. Phase V of Lothal was equated with Rangpur IIB and IIC. When calibrated, two 'post-Harappan' dates from Lothal (TF-23, TF-19) show points before c. 2000 B.C. Surko Rada IB and Desapur IB, both in Kutch, were interpreted as 'modified Harappan'. This evidence was also encountered in an earlier excavation at Rojdi or Shrinathgarh where the Prabhas ware (after the name of Prabhas Patan or Somnath) and the lustrous red ware were found together. Meanwhile, the new excavations at Amri in Sind showed the post-Harappan Jhukar occupation as being one in which no sharp break with the urban Harappan was noticeable. Mughal's subsequent work at Jhukar further focussed on the issue. In the Cholistan area about fifty sites with the Cemetery H related material were found along with locations in the very same area where mature Harappan sites were found. Towards the east, in the extensive area between the Ghaggar and the Yamuna and between the Himalayan foothills and the area around Kalbangan the 'late Harappan' stage was first identified at Mitathal in Haryana (Mitathal IIB) and this was related to Bara, a site excavated earlier in Panjab. Attempts have since been made in this area to establish links between the late Harappan stage and the subsequent cultures of the region. In Maharashtra the Damabad excavations led to the identification of a late Harappan level in that region. It is thus more or less clear that the 'late Harappans' have come to occupy a distinct place in the archaeological sequence of Sind, Gujarat, Rajasthan, Haryana, east Panjab, the western portion of U.P. and north Deccan. However, there is a fair amount of regional variation and only two features seem to be common to the entire late Harappan phenomenon: its stratigraphic position immediately after the mature Harappan urban phase with evidence of its links to this level, and the total absence of some of the principal Harappan urban features.

II. Regional Data

The situation in Baluchistan is still obscure. There is apparently no cognizable set of data from north Baluchistan. In the Kachhi plain it has been noted that the tradition of Kechi Beg pottery in the Quetta valley, which was laid down in the second half of the fourth millennium B.C., continued till a much later phase at the site of Pirak which has some evidence of Harappan contact in its post-2000 B.C. level (Shaffer 1992). In south Baluchistan Maghji (1990) believes that the Kulli culture continued into what would be considered the late Harappan phase in Sind. In Sind his archaeological work at Jhukar led him to postulate three successive and

inter-related phases at the site, which were all associated with the mature Harappan pottery. On the basis of the stratified evidence he designated 'Jhukar' as 'only a pottery style emerging in association with the continuing Mature Harappan tradition without any break or sudden change in cultural continuity'. However, circular stamped seals with bossed backs made their appearance, the typical Indus rectangular specimens became virtually absent and the use of cubical stone weights and stylized female figurines became rare. The script apparently came to occur only on potsherds. In western Panjab and Cholistan the late Harappan phase is marked by sites bearing the Cemetery H pottery which was first identified at Harappa and Chak Purvane Syal as early as during Vats' excavations (Vats 1940). This has been further defined as belonging to Period 5 of the site in recent excavations (Kenoyer 1991) which also suggest a transitional Period 4 between this period and the mature Harappan Period 3. Drains and burnt bricks, both of a smaller size than those of the mature Harappan level, have been reported from the Cemetery H period, but the details are still unpublished. The emphasis is on cultural continuity from the earlier mature Harappan period. The fifty sites of the Cemetery H phase, which have been identified by Mughal in the Cholistan area, include some sites with kilns and pottery firing areas and display a four-tiered settlement hierarchy among the twenty-six sites for which size estimates are available: up to 5 ha — 12 sites, between 5 and 10 ha — 7 sites, between 10 and 20 ha — 6 sites, above 20 ha — 1 site (Kudwala) which measures 38.1 ha (about 95 acres). Mughal further refers to a change in their locations in relation to the mature Harappan sites. He again lays emphasis on cultural continuity.

The ceramics do indicate changes in certain forms and painted styles but the Harappan cultural tradition persisted for some time and then gradually dwindled to a vague or faint expression in just a few pottery forms until the end of second millennium BC, by which time, the Harappan tradition was lost and forgotten (Mughal, 1990: 2).

In the area between the Sutlej and the Yamuna, which covers the modern Indian political units of Panjab, Haryana, U.P., Himachal Pradesh, Delhi and Chandigarh there are 563 late Harappan sites according to the list published by J.P. Joshi and his associates in 1984 (Joshi, Bala and Ram 1984). Certainly more sites have been discovered in this region since then. Size estimates are available only in patches, most of the reported settlements seem to be within five acres in extent. A good number of them possibly measured much less. The ceramic continuity has been

adequately worked out but the cultural details are still meagre. Among the excavated sites in Haryana the late Harappan phase of Banawali has provided some non-ceramic evidence: mud houses, faience ornaments (bangles, anklets, rings, beads and pipal leaf shaped ear rings), beads of semi-precious stones, some copper, ritualistic clay objects, terracotta toy cart frames etc. In Panjab mud floors with postholes and hearths, mudbrick structures, storage pits, kilns and a fire altar (divided into two parts containing ash and unbaked and semi-baked mud cakes) were found at Sanghol. At Dadheri, the settlement stood over a solid mud platform which acted as the substructure on which mud houses were built. The excavated antiquities of the period include terracotta wheels, beads, copper objects, a painted bull, faience bangles and beads of carnelian and lapis lazuli (for the Panjab sites, Bala 1992, 24 ff). The site of Mohrana in Panjab yielded in this level remains of hulled and naked six-row barley, dwarf wheat, club wheat, lentil and grape pips (*Vitis vinifera* L.). Rohra showed, as early as in its pre-Harappan level, barley, dwarf wheat, emmer wheat, lentil, horse gram (*Dolichos biflorus*), sorghum millet, grape pips and date palm. One may assume that the same crops were known at this site in the late Harappan phase as well (for these crops, IAR 1983: 84). At Hulas in the Saharanpur district of the doab in U.P. the most distinctive feature of the late Harappan level is the presence of circular mud and reed houses, copper objects and an impressive variety of crops. These crops include rice, barley, dwarf wheat, bread wheat, club wheat, oats, *Avena sativa*, sorghum/jowar, ragi, finger millet (*Eleusine coracana*), lentil, field pea (*Pisum arvense*), grass pea (*Lathyrus sativus*), Kudhu (*Dolichos biflorus*), green gram, moong (*Vigna radiata*), chick pea or gram (*Cicer arietinum*), a broken seed cow pea (*Vigna unguiculata*), cotton (*Gossypium crebreum*), castor (*Ricinus communis*) and some varieties of fruit and wild glasses. Amond (*Prunus amodialis*) and walnut (*Juglans regia*) are among other noteworthy finds from this site. These crop-lists clearly suggest that the hundreds of late Harappan sites in the Indo-Gangetic divide were not temporary settlements but settlements with well-developed farming practices (for the crop list from Hulas, see IAR 1986: 87). What is especially remarkable is that the later cultures of the region are found inter-linked with the late Harappan levels at a number of sites in the region. The co-occurrence of Painted Grey Ware with the late Harappans at the Panjab sites of Bhagawanpura, Dadheri, Natar and Kupalon (see Bala 1992) and the roots of Ochre Coloured Pottery in the late Harappan sites at the doab sites of Ambikheri, Bargaon, etc., clearly demonstrate, among other things, how the Harappan culture instead of coming

to an abrupt end, merged into the main flow of the Gangetic valley archaeological sequence. Another interesting point is that, although the distribution of pre-early Harappan and Harappan sites in the region shows a concentration in some pockets, the distribution of the late Harappan sites here seems to be more evenly spread. This simple fact may imply that, contrary to Francfort's hypothesis that the postulated irrigation system of the earlier periods declined during this period and brought about the end of the Harappan civilization in the region, the irrigation system became more broad-based.

For a clear approach to the problem of 'late Harappans' in Gujarat it may be best to begin with S. R. Rao's statement on the indisputably 'late Harappan' Lothal B or Lothal Phase V (Rao 1979: 33-6). In addition to ceramic changes, there were jerry-built houses of mud and reeds, less use of copper, short blades of jasper and chalcedony in place of long blades, ribbon-like blades of chert, biconical terracotta beads in place of jasper and carnelian beads and 'a gradual replacement of cubical weights of chert and agate by truncated weights of schist and sandstone larger in size than the earlier ones'. The use of rectangular steatite seals with the Indus script continued but during this phase there is no seal with animal motifs.

Some observations on comparative stratigraphy by Rao in this context are important: (1) The Prabhas ware of Prabhas Patan occurs 'in very small quantities' in this phase at Lothal 'with the degenerate Harappan wares', (2) this Prabhas ware also occurs in Rojdi Ia 'along with the straight-sided bowls in a degenerate Harappan fabric', (3) 'Phase V of Lothal, i.e. Period B can be roughly equated to Rangpur IIB and IIC except for the fact that the evolved ceramic types of Lothal B do not bear a lustrous red surface as in Rangpur IIC'. Thus, all the above-mentioned levels, i.e. Lothal B, Rojdi Ia, Rangpur IIB and IIC belong to the late Harappan phase in Gujarat on the basis of the stratigraphic evidence worked out by Rao at Rangpur and Lothal.

The recent claim that Rojdi and all Rangpur IIB and IIC sites in Gujarat should be treated as mature Harappan and not as late Harappan sites (Bhan 1992) has arisen because the radiocarbon dates from Rojdi are on par with those from the mature Harappan phase of Lothal. The claim that there were two mature Harappan traditions in Gujarat, one represented by Lothal and the other by Rojdi is perhaps both unwarranted and unfortunate. If one notes carefully the range of calibrated dates from Lothal B is not significantly lower than those from Lothal A. Should one argue on this basis that both Lothal A and Lothal B belong to the same period? Secondly, going by the Rojdi dates and accepting the stratigraphic argu-

ment that Rojdi is later than Lothal A, it is also possible to suggest that the mature Harappan phase at Lothal belongs to the first half of the third millennium BC. In other words, the date of the beginning of the Indus civilization is much earlier than the postulated 2500 BC. Then, again, what happens to the Lothal A radiocarbon dates, none of whose calibrated initial points is earlier than 2655 BC? So the situation is more complex than Possehl and his associates would have us believe. Till Lothal and Rangpur sequences and their stratigraphic correlations with other Gujarat sites are shown to be wrong, there is no special reason to assume that sites like Rojdi and many others with Rangpur IIB and IIC affiliations in Gujarat are not late Harappan.

The late Harappan phase in Gujarat is likely to have been characterized by a number of settlement types. These settlements apparently belong to two chronological phases which, pending a clear picture, may simply be expressed as pre-lustrous red ware and lustrous red ware sites. To the first phase should belong the assortment of sites like Lothal B, Rojdi, Babar Kot, Padri, etc. It is not easy to put Kuntasi II in the late Harappan category, as its excavator apparently does (IAR 1987-88: 18), because this phase contains 'typical Harappan painted pottery, long tubular carterak beads, cubical chert weights, etc.'

I have already referred to the jerry-built mud and reed houses of Lothal B. The main find at Rojdi is that of a storeable wall enclosing the main settlement except on the side of the Bhadar river which flows by the side of the settlement on the east. On the western side this wall was pierced by a gateway. The wall, 1.5 m to 2 m thick, was constructed by putting two parallel lines of large basalt boulders (some weighing more than a metric ton) on shallow foundation trenches and filling up the intervening space with rammed earth and rubble. The double-bastioned gateway was built of the same material and miscellaneous structures constructed with rubble-masonry have been found elsewhere at the site. In addition to the millets (*Eleusine coracana*, *Echinochloa colonum*, *Paspalum scrobiculatum*, *Panicum mitare*, *Setaria italica* and *Sorghum*) the crop remains at this site include barley, *Hordeum* sp., mustard (*Brassica* sp.), sesame or *Lepidium* sp., linseed, pea (*Pisum sativum*), vetches, broad bean, field bean, a number of gram varieties (moong, horse gram, etc.), jujube and an assortment of weeds, medicinal plants and grasses which could be used as fodder (Weber 1961). The site of Rojdi measures about 7 ha in extent. Babarkot (Possehl and Raval 1991) measures about 2.7 ha and shows a fortification wall made of stone blocks and blocks of locally available brick in the earth. The crops include millets, gram, etc. Among the

metal implements of this phase of the late Harappans in Gujarat, the specimens from Rojdi may be representative of the general character of such finds: axe, bar celts, bangles, rings, a fish-hook, pieces of wire, a pin and a *parasu* (Chitalwala 1989).

Prabhas Patan or Somnath is another site of this genre. Before he joined Possehl (Dhavalikar and Possehl 1992) in extolling the 'pre Harappan' character of Prabhas I on the basis of a Calib-2 mean of the calibrated range of two radiocarbon dates from this level, Dhavalikar (1984) said that there was 'every possibility' of these dates being contaminated. Incidentally, there is a Calib-2 mean point of 2343 BC from the lustrous red ware level of this site. One wonders if Dhavalikar and his associates would interpret the lustrous red ware as a sub-variant of 'Sorath Harappan'. In any case, Dhavalikar (1984) divides Prabhas II into two sub-periods: Early (without lustrous red ware) and late (with lustrous red ware). S. R. Rao (1990: 153) clearly mentions that late Harappan pottery was in use in the Prabhas culture which is Prabhas II. A stone-built structural complex (stone blocks set in mud mortar) showing a number of small (1.5 m sq.) and large (3.5 m by 1.5 m) rooms has been interpreted as a warehouse. The argument is that these rooms do not have properly plastered floors, postholes/hearths and most of the larger rooms have near their entrance four large stones set in mud mortar to form a sort of platform. Copper, obsidian (available in Gujarat, contrary to Dhavalikar's notion that it came all the way from Turkey), chalcedony, carnelian, agate and gold were among the raw materials used. There are also references to a steatite seal amulet, segmented faience beads and cubical chert weights.

The beginning of occupation at Bet Dwaraka which shows lustrous red ware is apparently later than that at Prabhas Patan, but as a site Bet Dwaraka is certainly very interesting. Late Rao (1990: 151-2) on this site

The excavations by the Marine Archaeology Unit of the National Institute of Oceanography in Goa (from 1984 to 1988) have confirmed the submergence of Dwaraka. The inner and outer fort walls, bastions and a gate of massive dressed stones have been traced on the right bank as well as the left banks of the submerged channel of the Gomati river. Important finds from the site are conch pashas in the Lustrous Red Ware. The ancient wall of the city in Bet Dwaraka 500 m long and hexagonal in plan is exposed in lowes low tide. The island of Bet Dwaraka... is noted for a Late Harappan site which was almost wholly submerged under the sea. The ancient city was originally 4 km long and 0.5 km wide. Remnants of fortification are seen in the sea bed at the

southern and northern extremities. The western wall in the cliff section of Bet Dwaraka provides convincing proof of a fortified city. Midway between the northern and southern extremities is a massive rectangular stone structure, 580 m long, which served as a fort wall-cum-pier. . . . An Indus seal carved with a 3-headed animal . . . and ceramic wares such as the Lustrous Red Ware, black-and-red ware and the votive jar inscribed in Late Harappan script suggest a 15th century BC date for the ancient city in Bet Dwaraka. Its submergence is attributed to a rise in sea level or subsidence of land or both. A stone mould of copper smelt, shell bangles, etc. are other antiquities from the site.

There is a thermoluminescent date of 3520 BP or 1570 BC from Bet Dwaraka, agreeing quite well with the archaeological evidence.

In his discussion of late Harappan Gujarat K. K. Bhan draws attention principally to the lustrous red ware sites in the Rupen valley in north Gujarat.

Most of the settlements are situated on the relict sand dunes and are associated with large areas of waste land locally known as *padthar*. Settlements are close to water sources which develop near the blowout hollows of these sand dunes and accumulate water from the monsoon run-off. They are camping sites for various pastoral communities even today. Usually the settlements are small and contain thin, scattered, ashy patches of cultural material. Most of them are less than 150 by 150 m. However, it should also be noted that settlements at Sai Timbo in Dukha and Thikanyono Timbo in Kathiawar villages measure 206 by 263 m and 239 by 116 m respectively. Both these settlements are associated with fire depressions that retain water for between 7 and 12 months, provided the area receives good monsoon (Bhan 1992: 176).

Among the late Harappan settlements listed by him, Bhan (1992, table 1) provides size measurements for thirty-three sites.

Less than 1 ha	1-2 ha	2-3 ha	3-4 ha	5 ha	8-9 ha
8	11	7	4	2	1

Many of these sites may be cattle-breeders' small seasonal stations, a classic example of which was found in the lustrous red ware context at Orva Timbo (Rissman and Chitalwala 1989). However, there are many more sites of this type, as R. N. Mehta (1982, 1984) and K. M. Amin (1984) clearly demonstrate. The lustrous red ware is apparently absent at some of these sites but at others it is present. However, they represent a distinct late Harappan settlement tradition in Gujarat and were archaeologically identified by R. N. Mehta, a singular achievement for him. Nesadi near Valabhi in the northeastern section of Kathiawar gets flooded during the monsoon and the presence of artifactual scatter over 200 m sq. here has

been linked to the seasonal migration of cowherd groups to different parts of western India in different seasons.

In this migration, the cowherds return to the area where they have come before and thus, the area is repeatedly occupied. This repetitive phenomenon would account for different places of occupation in the Nesadi locality. This phenomenon would also account for the sparse settlement where at any given time a few cowherd families might live.

The evidence from Kanewal (Momin 1984) in the Kheda district located at the mouth of the Gulf of Cambay is more detailed—circular wattle-and-daub huts with rammed floors—similar to the modern houses of this type (*Kubari*) in the area—oblong and triangular terracotta cakes, terracotta round pellets, carnelian, faience, shell and terracotta beads, terracotta spindle-whorls, net-sinkers, copper and a wide variety of pottery including the lustrous red ware. Regarding the general distribution of these type of sites, Mehta (1982) observes that they are found in a variety of soils and Momin notes that in the Kheda district these sites are 'spread over an area of 30 kilometres, each about 2 to 4 kilometres from the other'. Mehta (1982) clearly mentions that 'ceramics with graffiti of the Indus script from these settlements, especially at Kanewal, indicate some form of literacy'.

The late Harappan situation in Gujarat is, in fact, remarkably interesting and offers a diversity which is not matched elsewhere during this period.

Hypothesis Regarding the End of Harappan Urbanism

The currently available data on the late Harappans suggest that, instead of coming to an abrupt end, the Indus civilization merged into the main flow of Indian cultural development. There is a clear movement of the Harappans from the Indo-Gangetic divide to the Ganga-Yamuna doab and there are also suggestions of their branching out in the directions of Malwa and Maharashtra from Gujarat. However, the form with which the Indus civilization merged in the later pattern of neolithic chakrabhitti growth in inner India was not its urban form. The urban traits could have lingered on at sites such as Rojdi and Bet Dwaraka in Gujarat and Kudwala in Cholistan, but the impression is of a much larger number of smaller settlements with a more diversified agricultural economy. To some extent this impression of a more diversified agricultural system may

be due to our incomplete knowledge of the Harappan agricultural system but at the same time the clustering of a large number of crop types at Hulas, Rohira, Rojdi, etc. tends to give this impression. Along with this, there was a decreased use of raw materials at different sites, and thus correspondingly there is less evidence of interaction between different areas. The external trade must have persisted to some extent, as the finds of Indus seals in the Kassite contexts at Nippur and in Failaka and the occurrence of a seal with a whorl motif at Bet Dwaraka indicate, but on the whole it can be concluded that in the late Harappan context there was a considerable decrease in the volume and intensity of both internal and external trade. There was also much less emphasis on the organization and scale of craft industries during this period. Lahiri (1992: 129 ff) has analysed the general pattern.

In most of the regions, no significant raw materials were being procured over great distances for manufacturing artefacts. The post-Harappan period, in relation to the rich archaeological inventories of the mature urban sites, was admittedly a far poorer cultural horizon. In no region do we find the scale and diversity which marked the mature Harappan phenomenon's archaeological repertoire. Admittedly there were significant continuities. Dohr Majra near Ropar, continued, at a more extensive scale than before, as a significant bead-manufacturing centre, and Bet Dwaraka marked the continuance in the Jamnagar region of the Harappan tradition of shell-working. But such sites are relatively speaking, few and rare in this period. What one sees, instead, is a number of smaller sites in different regions broadly following the preceding settlement patterns but with certain areas more closely and extensively populated.

In the incipient context this is likely to mean the demise of an organized structure, centred around one or more units. As we shall see, the binding force of later historic urbanism in India has always been a political force—the chrysalis of a state. There is nothing to argue that the situation would have been totally dissimilar in the Harappan context. Ratnagar (1991) has forcefully argued in favour of a unitary Harappan state over the entire Harappan distribution area (for an earlier argument along this line, see Jacobson 1986). I accept her general idea but add that evidence of the later historical pattern would be corroborated by the postulate of several states in this large area.

In the early historical context the distribution area of the Harappan civilization witnessed political unification only under the Mauryas who, incidentally, did not last even for 150 years. Under the Kushans, the next

most powerful political force of the region, Gujarat was probably under the Kshatrapa rule; the area as a whole was not unified. As things stand one comes across the names of different territorial units for different parts of this area: Sindh, Satavira (the area to the east of the Indus), Anarta (a part of the Saurashtra peninsula), Kekaya, Madra (both in Punjab), Brahmagvarta (the area between the Sarasvati and the Drishadvati), etc. So, without unduly labouring the point, one may claim that there is an even chance of the Indus civilization being based on a number of kingdoms or organized political units. The political unity is not necessarily suggested by the uniformity of material remains, as the N.B.P. based early historical culture of northern India from the northwest to the Bay of Bengal did not reflect political unity. In fact, the political unity of this region, which came with the Mauryas, came only towards the end of the overall N.B.P. period between c. 700 and c. 200 BC.

How did the political fabric of the Indus civilization come to be so weak? To a considerable extent the process must have been linked to the hydrographic changes in the Sarasvati-Drishadvati system, leading perhaps to both river-course changes and the rapid acceleration of their drying process. But this does not explain the Gujarat situation, nor does it wholly explain the situation in the 'divide' and the doab. A fact which has not been taken into consideration by scholars in this context is that over a very large part of its distribution area the Harappan civilization did not have a long process of antecedence as it had in its core area, and in a sense, it was imposed on what must have been a basically hunting-gathering economic context. In the entire stretch roughly to the east of the Hakra distribution area in Cholistan, the Harappans cannot be credited with a long antecedence in the sense that the 'early' Harappan level here was probably later than the same level in Cholistan, the Malan area and Sind. In the doab the Harappans did not have any antecedence at all. They were very much in virgin territories. In the Saurashtra peninsula and mainland Gujarat no early Harappan level has yet been identified, the two early dates from the pre-Prabhas wate level at Prabhas Patan notwithstanding. Here the Indus civilization was imposed on a landscape dominated by microlith-using hunter-gatherers. This must have been very significant in a number of ways, and one can safely predict that many hunting-gathering groups were also absorbed in the Harappan system, but at the same time one has to admit that the Harappans eventually came to be rather thinly stretched on the ground, and the weakening of their political fabric was almost inevitable. They were swallowed up, as it were, by the much less advanced pre-agricultural groups of inner India.

THE NEOLITHIC-CHALCOLITHIC CULTURES OUTSIDE THE HARAPPAN ORBIT

Whatever the reason or complex of reasons, Harappan urbanism faded away by the middle of the second millennium BC or later (for terminological dates from Hulas, see Singhvi et al. 1991). For some centuries, till the beginning of the early historic period in the Gangetic valley and elsewhere in the seventh/sixth century BC, India was, from the archaeological point of view, a land of non-literate village farming communities.

This section will outline the regional patterns and point out how the basis of later historic India is rooted in them.

Northwest Frontier and Kashmir

We do not have an integrated picture of cultural development in this region which falls into at least three major areas: the area between Swat and Chitral, which is a land of mountain valleys oriented principally towards northeastern Afghanistan and the Kashmir-Pamir axis directly on the way to central Asia, the stretch between Peshawar and Taxila which itself comprises the Peshawar valley and the Potwar plateau with the Indus acting as the dividing line between them, and finally, the valley of Kashmir which is linked with its neighbouring regions through a large number of routes of varying historical significance. I noted earlier that the neolithic level of Sarai Khola in the Potwar plateau gave way to a Kot Diji-related horizon, and in some way this region as a whole was within the trading network of the contemporary Indus plains. In the Swat-Chitral region the large number of sites which have been excavated by Pakistani and Italian scholars show the use of copper, bronze, gold, silver, alabaster,agate, carnelian, jade, lapis lazuli, onyx, chalcedony, quartz, quartzite, schist, limestone, granite, serpentine, shell and ivory, among which **shell, coral and ivory were most likely to have reached this region from the Indus plains** (Lahiri 1992). The base line in Swat-Chitral is provided by Period I of the rockshelter site of Ghaligai, (Stacul 1969), which perhaps goes back to 3000 BC and shows an assemblage marked by coarse handmade pottery, bone and pebble tools and animal remains which **include antler and boar tusks**. Period II contains wheelmade pottery which is said to be reminiscent of the Harappan Indus valley and north Baluchistan. In Period III handmade crude pottery with a non-impressed fine and flaked bone and stone tools find a general typological comparison with the first phase of the Kashmir neolithic. Its second phase, with

wheelmade pottery and a little copper has been correlated with Ghaligai IV. Periods V-VII of Ghaligai have been designated as the 'archaic', 'middle' and 'late' phases of the 'protohistoric graveyards' of the region dated between the second quarter of the second millennium BC and the late centuries BC. The evidence of such graveyards and associated settlements has been categorized by A. H. Dani (1967) as 'Gandhara Grave Culture'; the graves are marked by inflexed burials and urn burials after cremation and belong to a copper stage with rubble stone masonry, wheat, barley, rice and a wide variety of raw materials. Some new ceramic elements and perhaps the use of iron are added to the assemblage in its third period. In view of the geographical position of the region some central Asian and Afghanistan affinities of this culture's pottery and a few miscellaneous artifacts (cf. Jettmar 1967) are only to be expected, but there is no reason to visualize this area and this culture as the springboard of any kind of migration to the interior of the subcontinent. It should also be pointed out that the archaeological evidence from all the explored and excavated sites of this area has not yet been integrated into a coherent picture, the attention of the excavators being directed towards seeking western and central Asiatic ceramic typological parallels.

The beginning of food production in Kashmir has been linked (Agrawal 1992: 211), to the last palaeosol formation in the valley around 5000 BP. More than thirty neolithic sites have been found scattered in this long and narrow valley but most of them are in the Baramulla, Anantnag and Srinagar regions. Whether this suggests uneven exploration or specific geographical preferences of the neolithic settlers is uncertain, but this distribution points out that this was not a culture isolated from the plains. Archaeologically, of course, this fact is well understood because the occurrence of a spiral-headed copper 'hairpin' at Gufkral and a Kot Diji-type 'horned deity design' on a gubbar pot at Barzahom underline, among other things, the interaction of Kashmir with the Indus plains during this period. The aceramic phase at Gufkral (JAR 1981-82; Sharma 1991), about 400 m by 75 m (roughly 3.4 acres, 2.69 ha.), showed large and small dwelling pits with a diameter of 1.5-3.8 m at the top and wider at the bottom. Shallow (20-30 cm deep) and large pits are said to be more common in its earlier phase. These pits as a general rule are surrounded by pits and hearths, with evidence of postholes supporting light structures around their total peripheries. There are examples of pits with two chambers in the later phase. Finished and unfinished stone celts, points, ringstones, pounders, saddle querns, bone/horn tools, terracotta and steatite beads, both domesticated and wild sheep and goat, wild

cattle, ibex, red deer (*Cervus elephas*), barley, wheat and lentil were present throughout.

Handmade grey pottery with a mat-impressed base is a distinguishing feature of the ceramic phase of the Kashmir neolithic at both its excavated sites—Gufkral and Barzahom (Pande 1970, Kaw 1979). This has further been divided into two sub-phases. The use of dwelling pits continues, and among other distinguishing traits should be listed a wide range of bone and polished stone tools, a type of pierced rectangular stone 'harvester' with a wide and non-specific distribution pattern in central Asia and China and the addition of common pea (*Pisum arvense*) and domestic cattle and fowl (*Gallus*) to the subsistence base. In the succeeding phase there is further evidence of mud and mudbrick houses, wheelmade pottery, some miscellaneous copper objects including a spiral-headed copper pin and primary and secondary human burials which are occasionally associated with dogs. A rather purposeful burial of animals like the dog, wolf and ibex is another distinctive feature. A stone slab with a stylized hunting scene engraved on it which has been found in this phase may have been derived from the earlier one. This is also the phase which has yielded a horned deity design and about 950 agate and carnelian beads. The neolithic phase in Kashmir merged into a megalithic megalithic phase around the middle of the second millennium BC (A. K. Sharma 1991).

Neolithic Harappan

I have already referred to the Ganeswar culture of this area and its significance as a copper metallurgical centre from the pre-Harappan stages onwards. I also argued that the development of such a major metallurgical centre in this area during this period could be one of the factors leading to the intensification of craft industries in the early Harappan context. However, this area maintained its pre-eminence as a centre of copper metallurgy not merely in the subsequent mature and late Harappan stages but also in the neolithic context outside the Harappan orbit. To begin with, the sites of this culture are concentrated in the Sikar district of northeast Rajasthan, with only two or three reported elsewhere in the neighbouring areas of Jhunjhuna and Jaipur. J. P. Joshi, Bala and Ram (1984) listed 48 sites in the Sikar district and plotted them in their map of pre-Harappan sites. Ten more sites, the names of which do not figure in the 1984 list, have been reported in JAR 1981-82 and 23 more were added to the list of JAR 1987-88. Of these, 11 are in Sikar and

8 of them in Jaipur. These sites are primarily in the Baleshwar and Khetri copper deposit areas which are strewn with traces of old copper workings. There are many reasons to link this area with the Harappan civilization as a major supplier of copper. Harappan pottery has been reported on the surface at two 'Ganeshwar' sites and at the site of Ganeshwar itself there is 'reserved slip ware' of a type which has been found only in the Indus context (for these sherds, see Agrawala and Kumar 1982). Apart from this direct ceramic evidence, Ganeshwar-type arrowheads have been found in the Harappan contexts at Banawali and elsewhere, and equally significant is the fact that double spiral-headed copper pins from Ganeshwar occur at some Harappan sites. It is interesting to observe that the flat and heavy (up to 1.8 kg in weight) pure copper axes that one finds at Nagwada and Surkotada (the analysed specimen from Nagwada has a bevelled cutting edge whereas the Surkotada specimen has a crescentic and sharp cutting edge (cf. Shesadri 1992) are very much like the reported Ganeshwar specimens (Agrawala and Kumar 1982). R.C. Agrawala who first excavated Ganeshwar has traced the copper finds which have apparent links with this area in different parts of Rajasthan, Malwa and the area stretching from Ganeshwar to Haryana and the doab.

Right from the first phase of work at this site by R.C. Agrawala (Agrawala and Kumar 1982) the sheer quantity (about 1000 objects) and variety (arrowheads, spearheads, fish-hooks, celts, spiral headed pins, etc.) were impressive. Another significant aspect was the co-existence of microliths at the site. Both these aspects have been elaborated in the post-Agrawala phases of work in 1981-83, 1983-83 and 1987-88. In 1981-82 three structural phases were reported from this context along with a highly evolved geometric microlithic industry of quartz, chert, jasper, garnet and chalcedony, stone and bone beads, querns, mullers, pestles, and an ochre-coloured pottery with paintings on the rim, neck and shoulder. The copper finds included arrowheads, spearheads, chisels, fishhooks, rings, hairpins and bangles. In 1983-84 almost the same types of metal finds were reported, with the addition of razor blades and antimony rods. A thin dull red pottery with paintings in black and white strokes was considered similar to the pre-early Harappan Sothi pottery. References were also made to a sturdy red-slipped ware with painting between the rim and the shoulder and to vases fitted with vertical handles. Microliths were found and so were mud platforms with partitions, storage pits, floors with post-holes, and animal bones including those of cattle, fish, fowl, sheep, goat, etc.

The sequence of the site was understood only in 1987-88. The first

phase showed a microlithic industry of quartz and chert and animal bones which were found mostly in a charred state and belonged, perhaps exclusively, to wild animals. The second phase witnessed the appearance of copper in a limited quantity (5 arrowheads, 3 fish-hooks, 1 spearhead and 1 awl), structural remains in the form of circular hut outlines and floors paved with pebbles and rock-fragments and 'partly handmade and partly wheelmade' pottery. Microliths and animal bones occurred in good number. The pottery of micaceous clay, with a bright red slip was ill-fired. There is, however, reference to 'a small number of sherds' made of well-levigated clay and well fired. One is not sure if these sherds were wheel-made or if the pottery forms such as narrow and wide-mouthed jars and small squat 'handis', belonged to the latter type or the earlier one. There was no punted pottery. Period III yielded several hundred copper objects (arrowheads, rings, bangles, spearheads, chisels, balls, celts, etc.), a lesser quantity of microliths and animal bones, and a wide range of pottery (goblets, beakers, tumblers, handled bowls, elliptical vases, cylindrical vases, lids, jars, offering stands, dishes, basins and 'miscellaneous types of pottery of pre-Harappan affinity'. As the excavators, P.L. Chakravarty and Vijay Kumar (IAR 1987-88: 102) put it, 'the evidence of Phase III at Ganeshwar has added a new horizon to the pre-Harappan technology'.

In view of the data furnished above, the significance of northeast Rajasthan as a copper mining and working area should be obvious. Ganeshwar, if one remembers correctly, should not be more than 3/4 acres, and according to the published reports this has already yielded about 2000 copper objects. When one remembers that there are published reports of eighty such sites, the possible scale of this copper mining and working strikes us forcefully. Finally, it is indeed curious that in no report on the excavations at Ganeshwar is there any reference to the actual evidence of copper smelting in the form of furnaces, cradles, etc. Much work needs to be done on the archaeology of this region. There are many old copper workings in the Baleshwar valley, and these workings also deserve careful study.

Southeast Rajasthan

Of the chronological group in southeast Rajasthan, a gneiss upland drained by the Banas, Berach and their tributaries, only two sites have been excavated so far—the type-site Ahar (Sankalia et al. 1969; for the earlier work by R.C. Agrawala, see IAR 1954-55: 14-15, IAR 1955-56: 14) and Gilund (IAR 1959-60: 41-6). Sites which belong to the Ahar or Banas

culture, which now number more than ninety (Hooja 1988), occur in the districts of Udaipur, Chitorgarh, Bhilwara, Ajmer, Jaipur and Tonk in Rajasthan and Mandasore in Madhya Pradesh. On the basis of a decline in the number of designs on its diagnostic ceramic trait, a black-and-red ware, it has been postulated that the general movement of the culture was from 'southwest to northeast up the course of the Berach and the Banas (Misra 1967: 148).

Rima Hooja's study shows that the Ahar sites 'were located along rivers, ranged in size from a couple of acres to over 10 acres, were frequently sited within five to ten miles of each other, and pre-empted later period agricultural settlements in their choice of locale' (Hooja 1988: 75). However, it must be admitted that both Ahar and Gilund measured more than 10 ha. The mound at Ahar is 1500 ft by 800 ft (27.5 acres/about 11 ha.) with the possibility of having been considerably eroded previously, while the mound at Gilund measures 800 by 250 yards (c. 10.5 ha.)

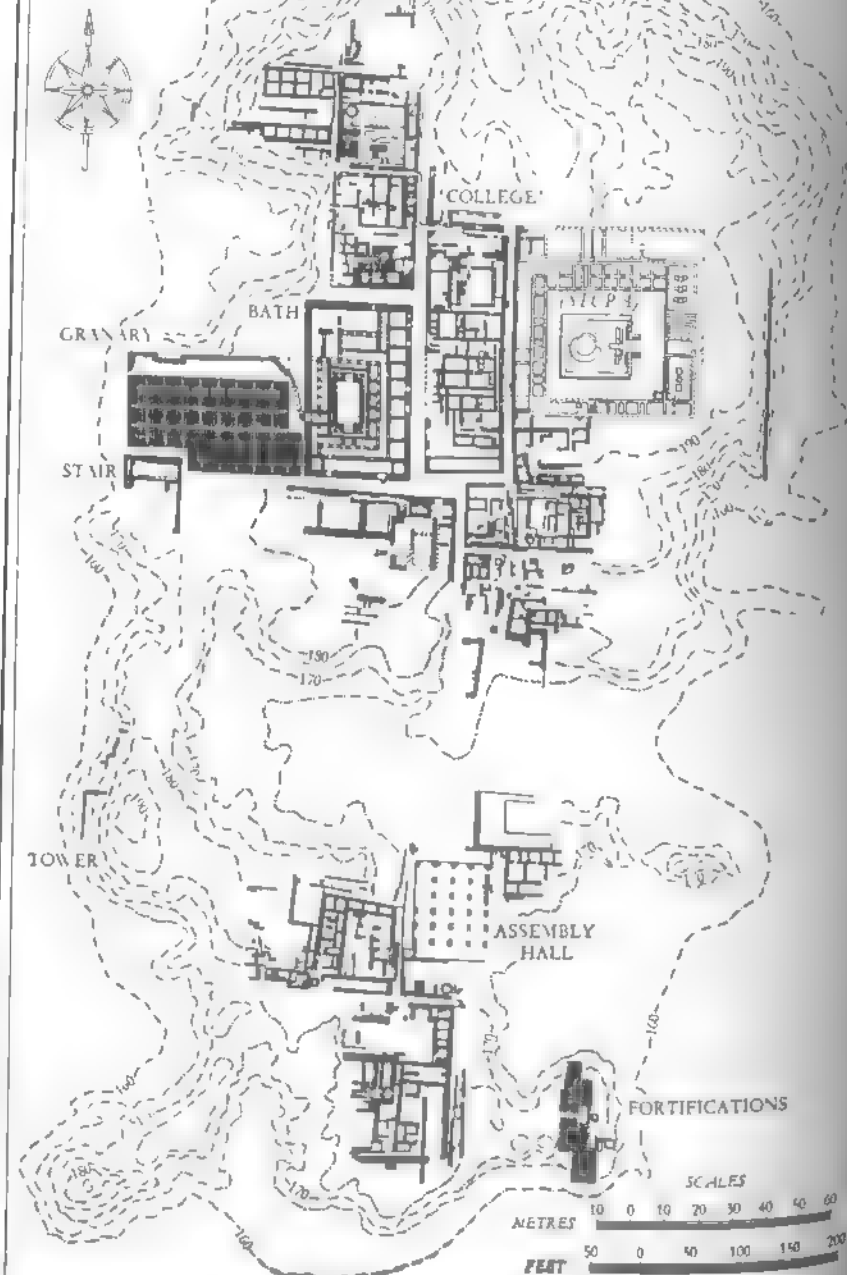
The bulk of the structural evidence comes from Ahar which has fifteen building phases. The ordinary houses were of mud and stone, 'stone' meaning locally available schist blocks used only as foundation. The walls were strengthened either by bamboo screens or quartz-nodules, and the roofs were probably sloping. The floors were of black clay mixed with yellow silt, occasionally paved with gravel from the river-bed. No complete house-plan is available but at Ahar one house was about 33 ft 10 ins (10.31 m) long, partitioned off by a mud wall. The ovens associated with the houses were multiple-mouthed and represent a type which is still in use in the region. In the earliest structural sub-period at Gilund, a large mudbrick complex, the purpose of which remains uncertain, has an exposed area of 100 ft by 80 ft (30.48 m by 24.38 m). In Gilund-2, sub-period C, five circular or oblong pits, 3 ft to 4 ft 4 ins (0.91 m to 1.32 m) along the major axis, may be storage pits. Another interesting structural evidence comes from the 'middle levels' of Gilund-3 where a burnt brick wall (36 ft by 1 ft 10 ins or 10.97 m by 0.55 m, incompletely exposed) with bricks of 14 ins (0.35 m) by 6 ins (0.15 m) by 5 ins (0.12 m) were found laid over a stone rubble foundation.

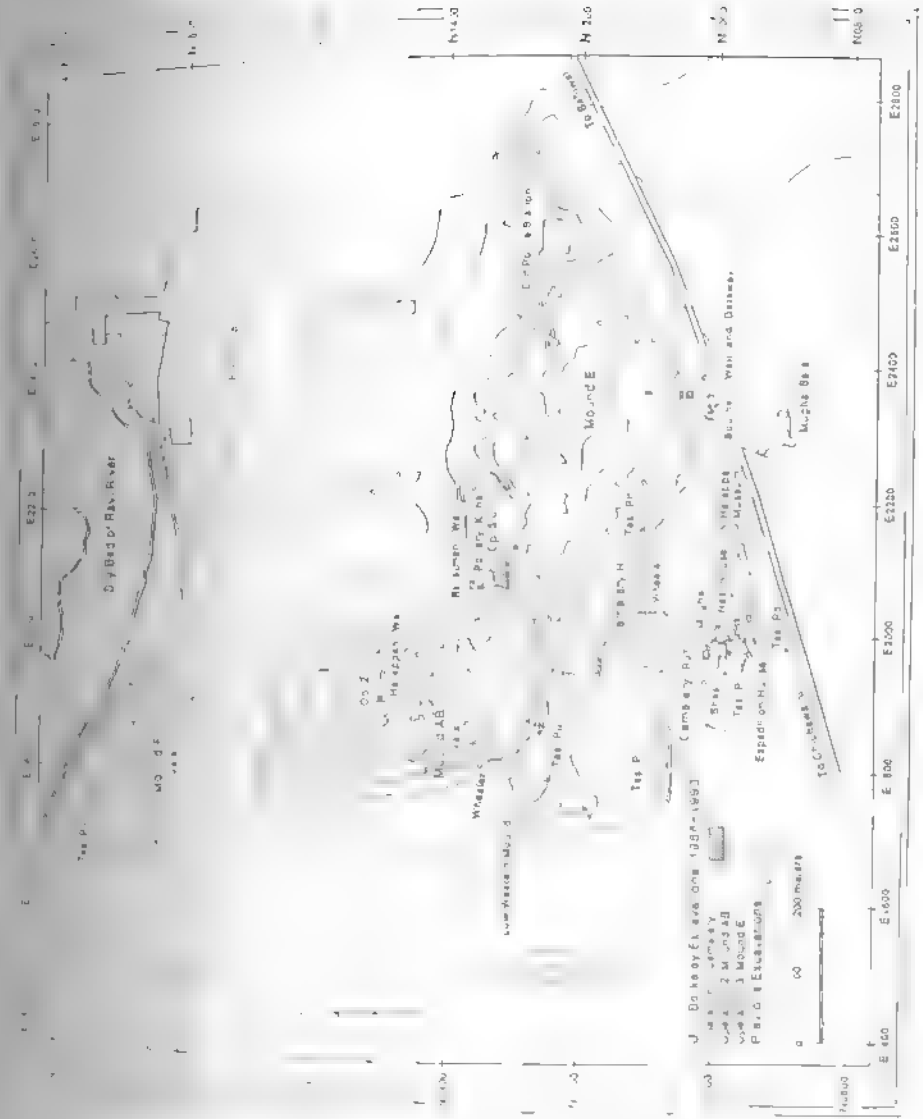
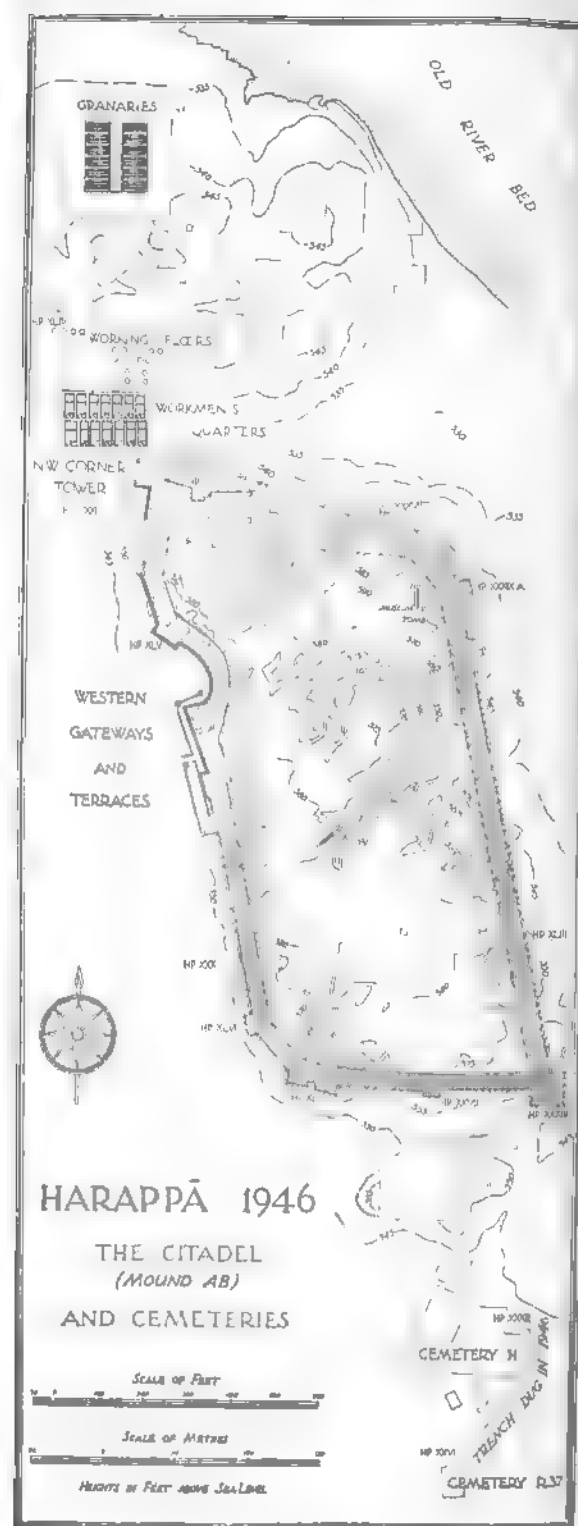
The diagnostic ceramic trait was a black-and-red ware with a variety of linear and dotted designs in white. Besides this there were cream-slipped, buff, blotchy grey, red-slipped ware and a limited quantity of lustrous red-western Indian and Jarwa-north Deccan wares at Ahar and plain and painted black burnished grey and red wares at Gilund. At Gilund there was also a polychrome ware with black, bright red and white paint on a red black ground.

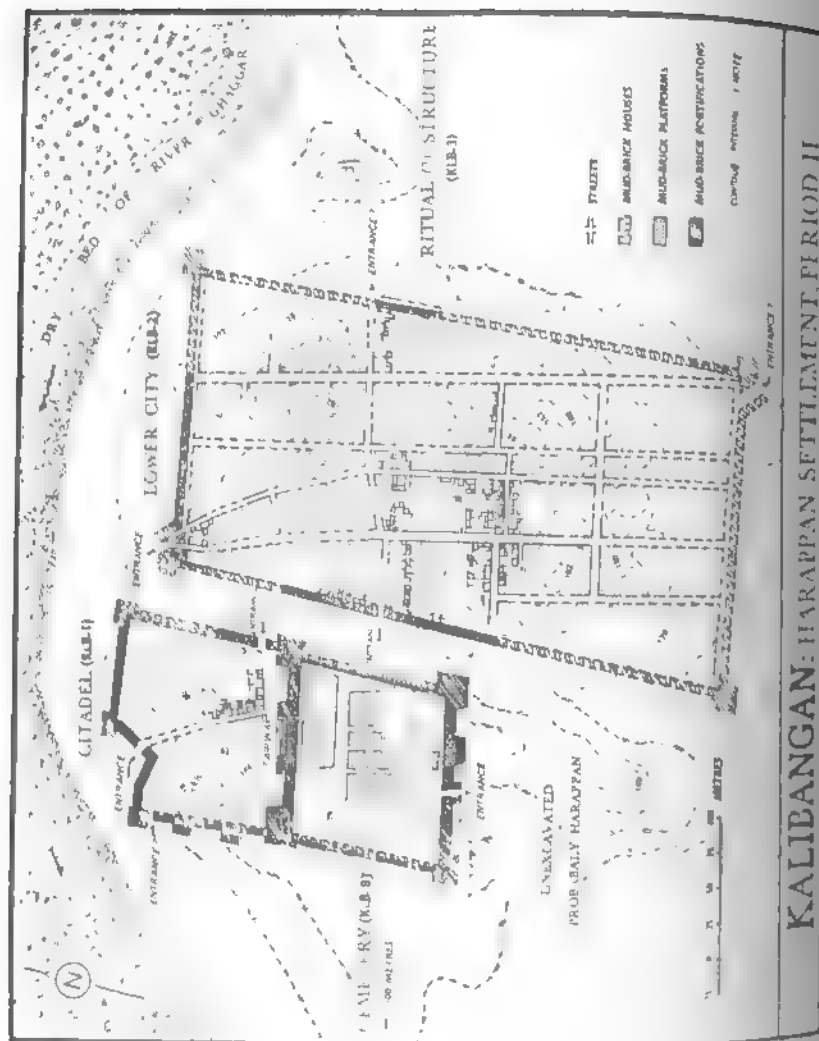


MOHENJO-DARO

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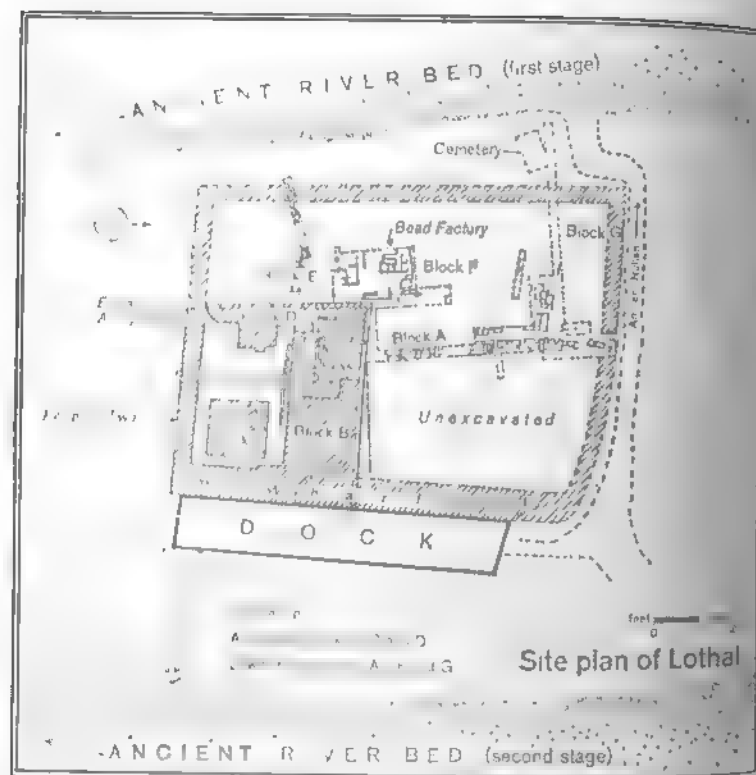




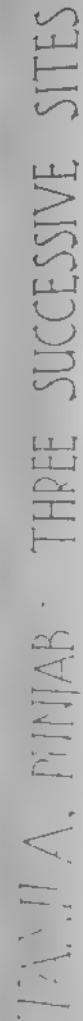


PANAWALI EXCAVATIONS
1974-77 & 83-84



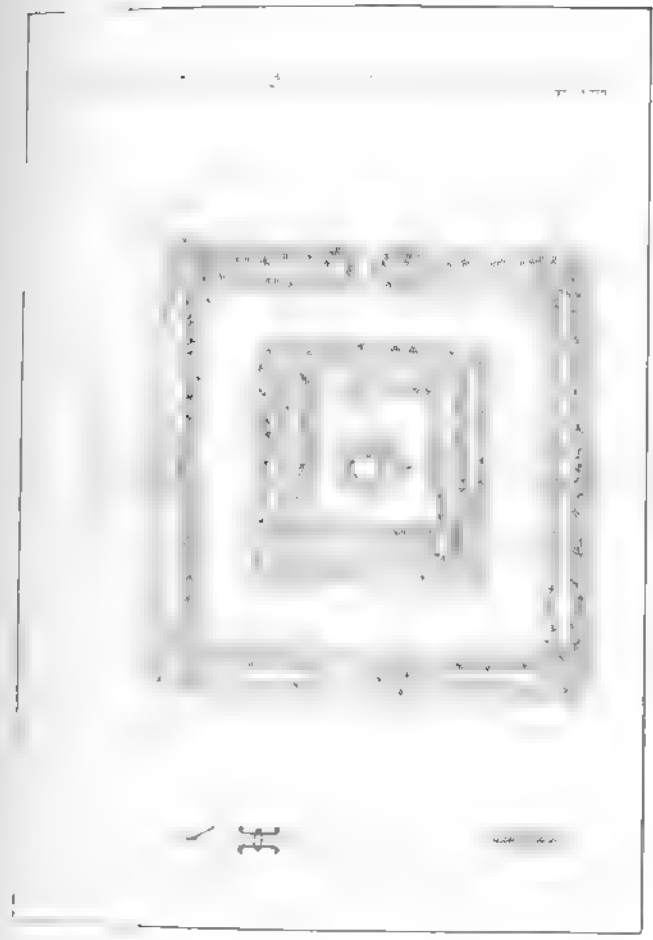


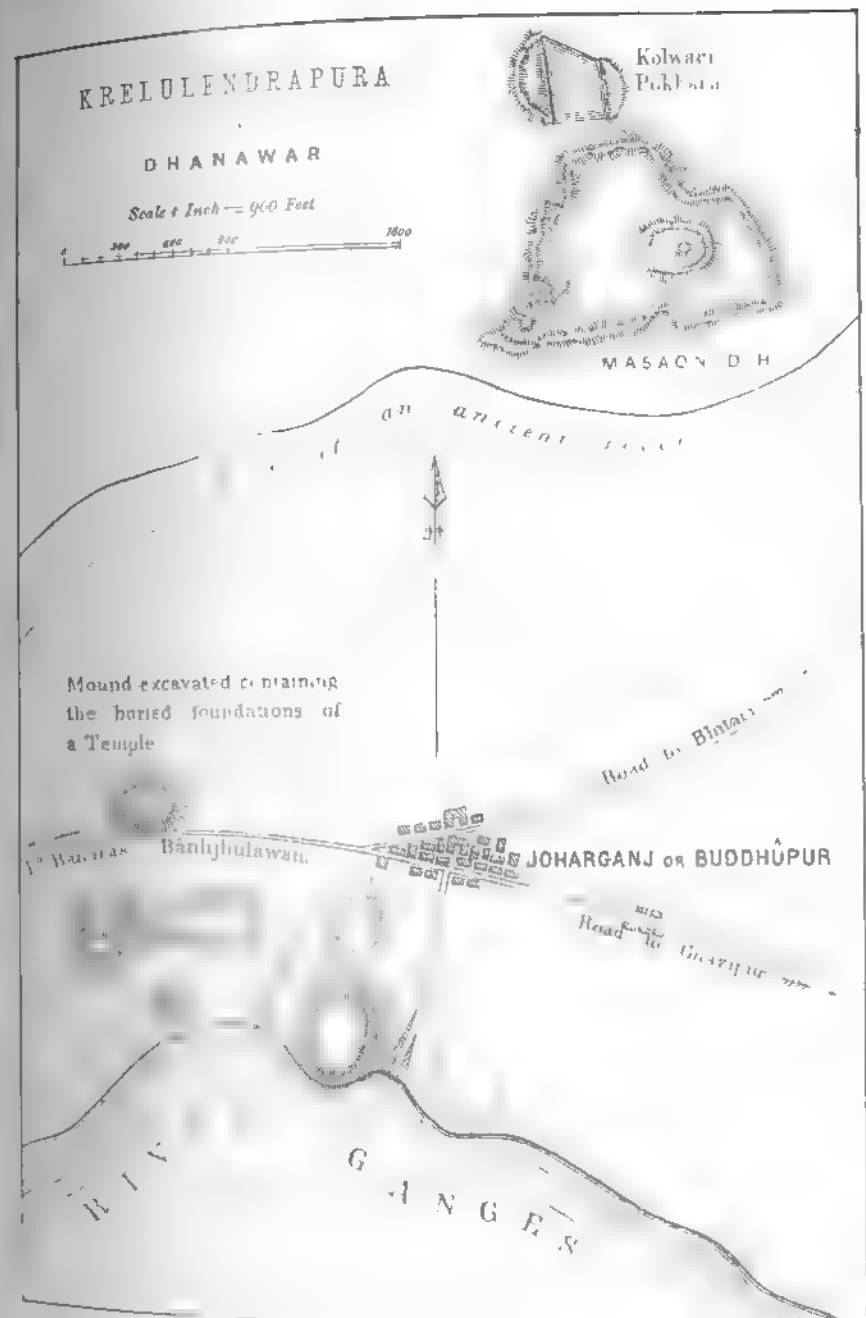
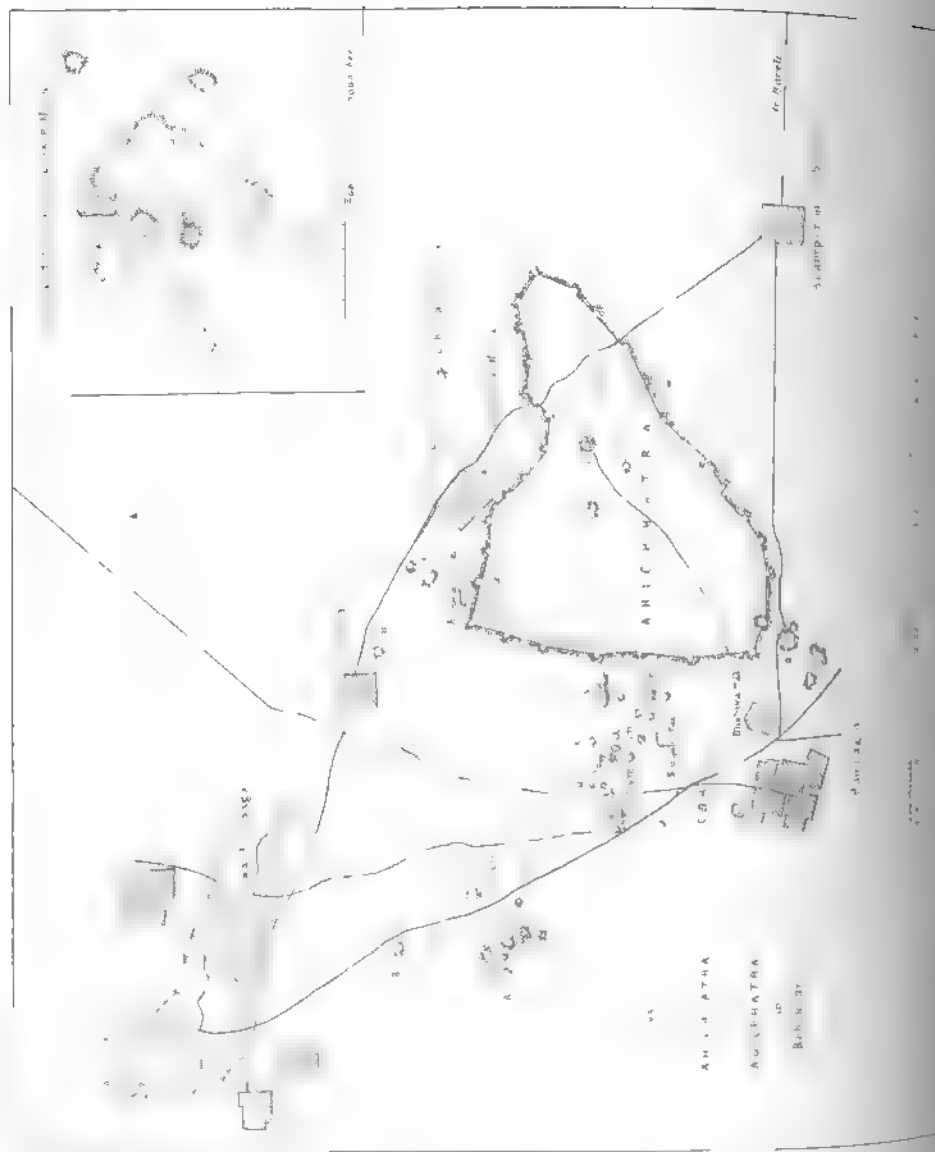
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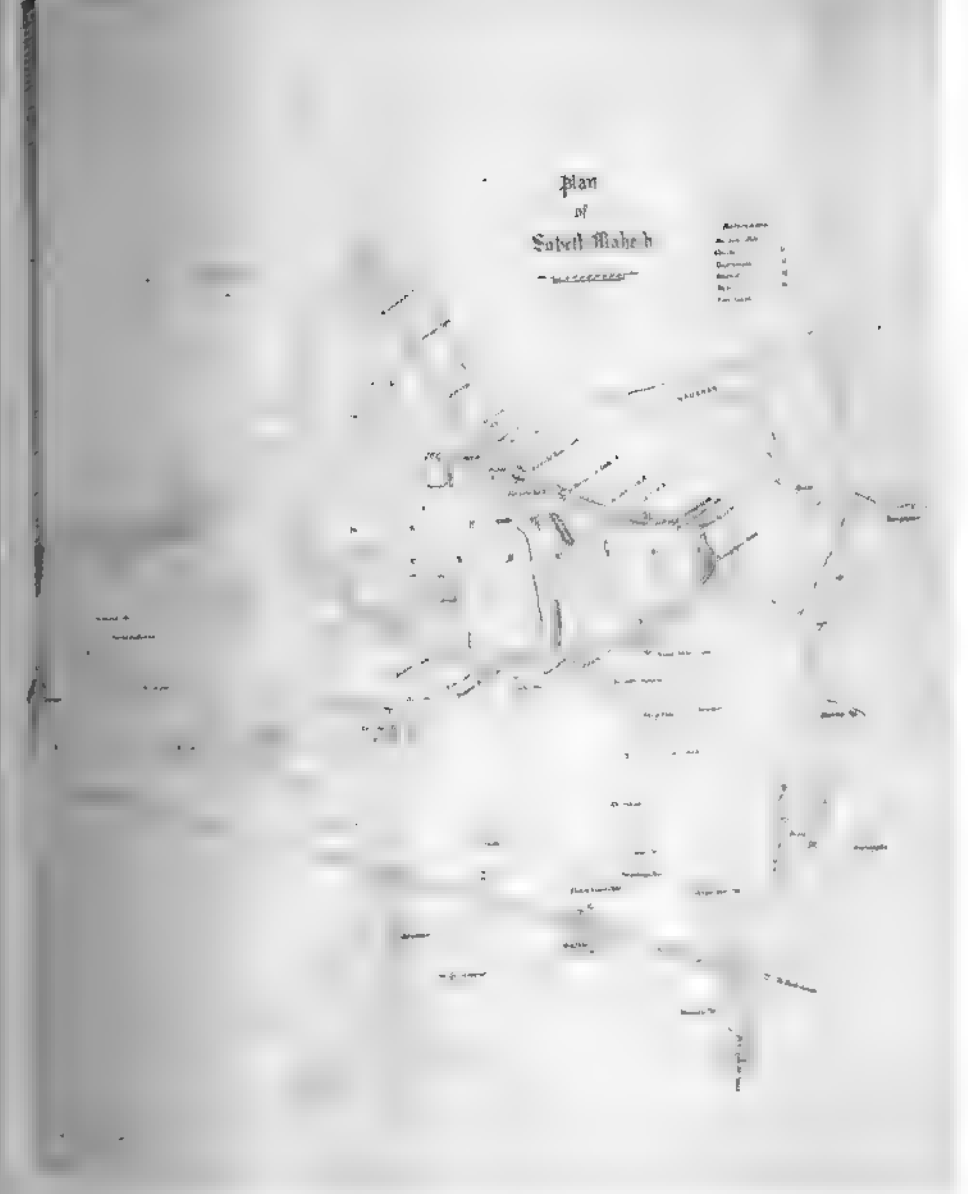
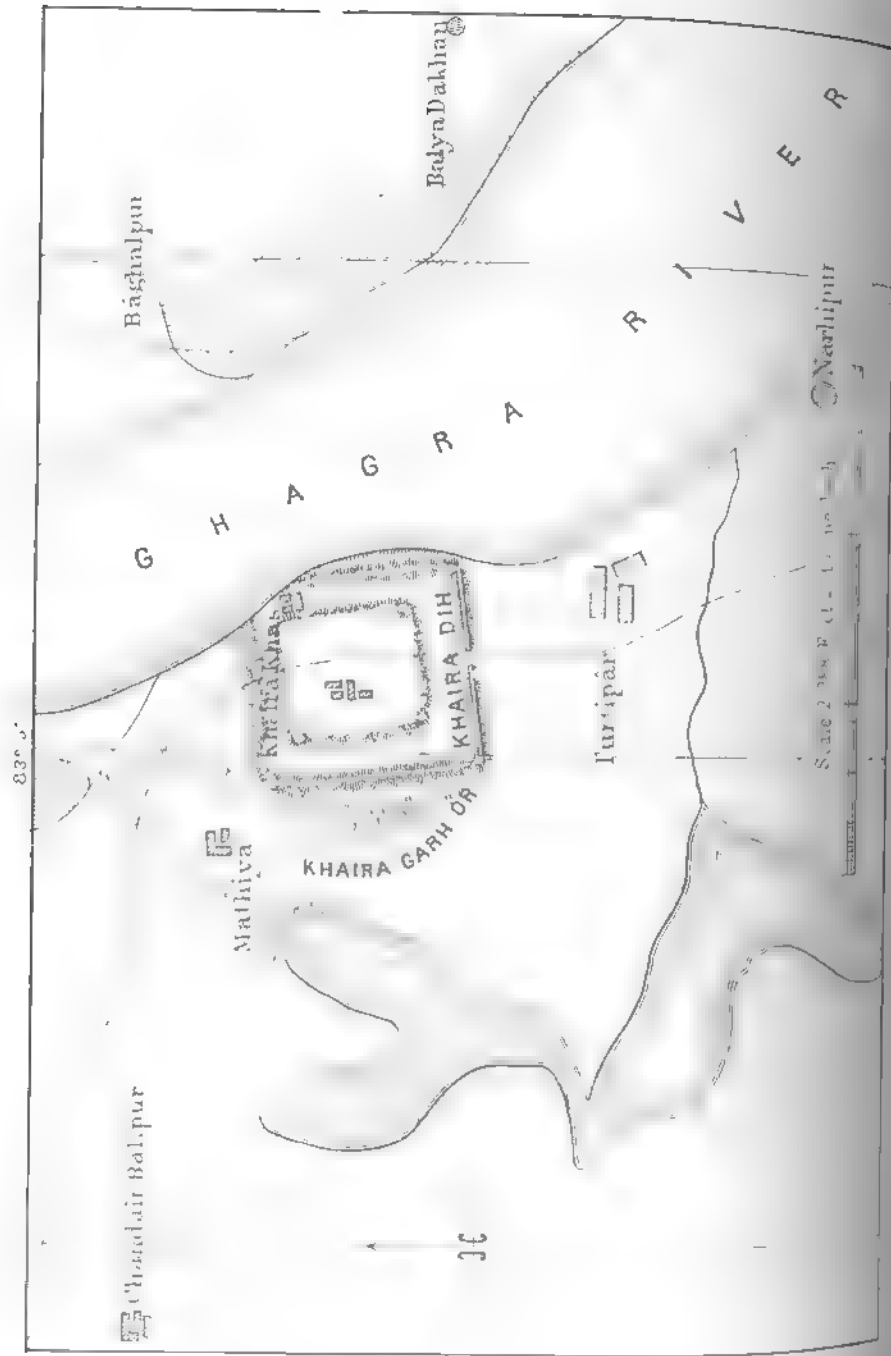


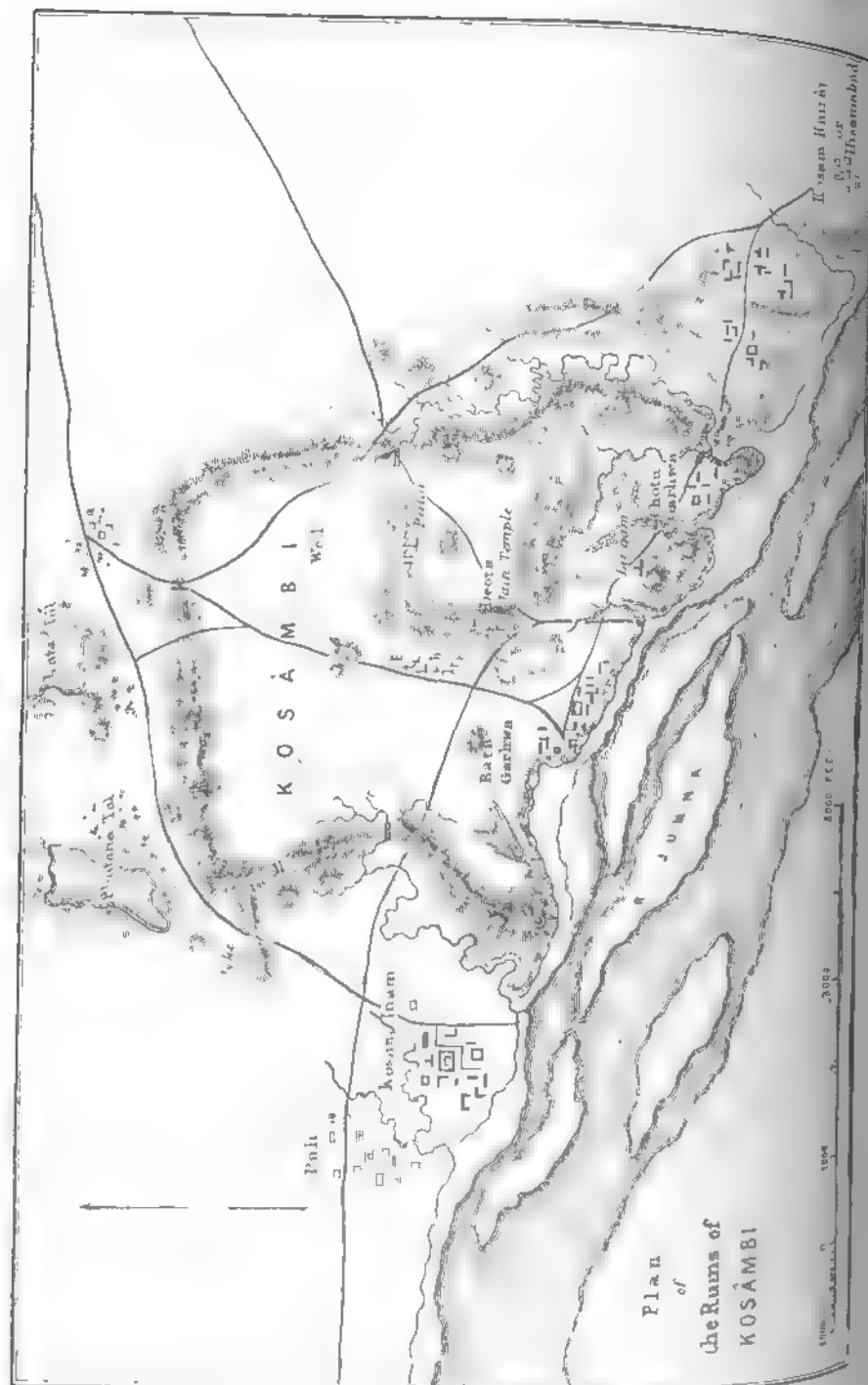
TAXILA II (SIRKAP)

C. 50 B.C. - A.D. 150







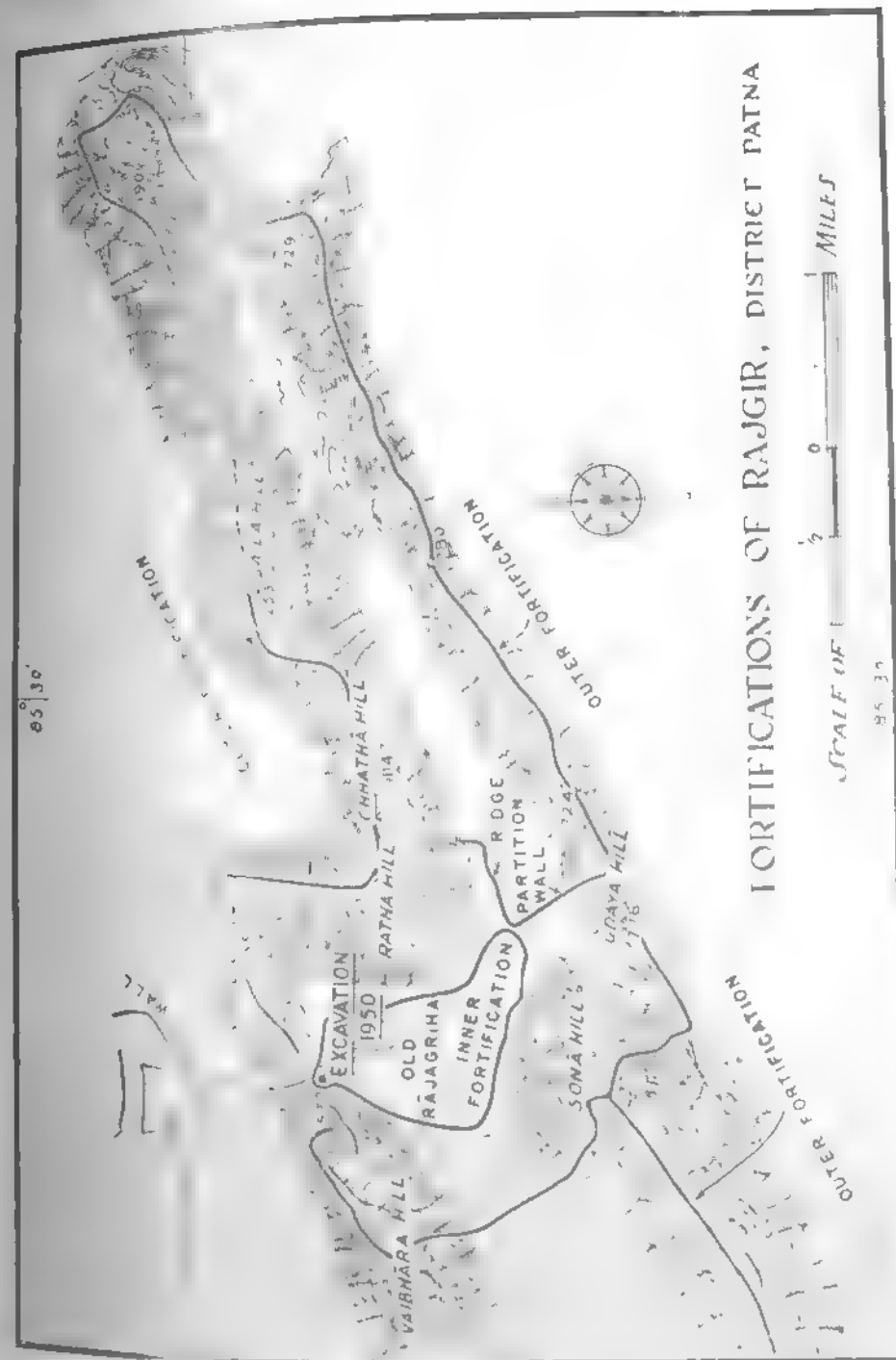
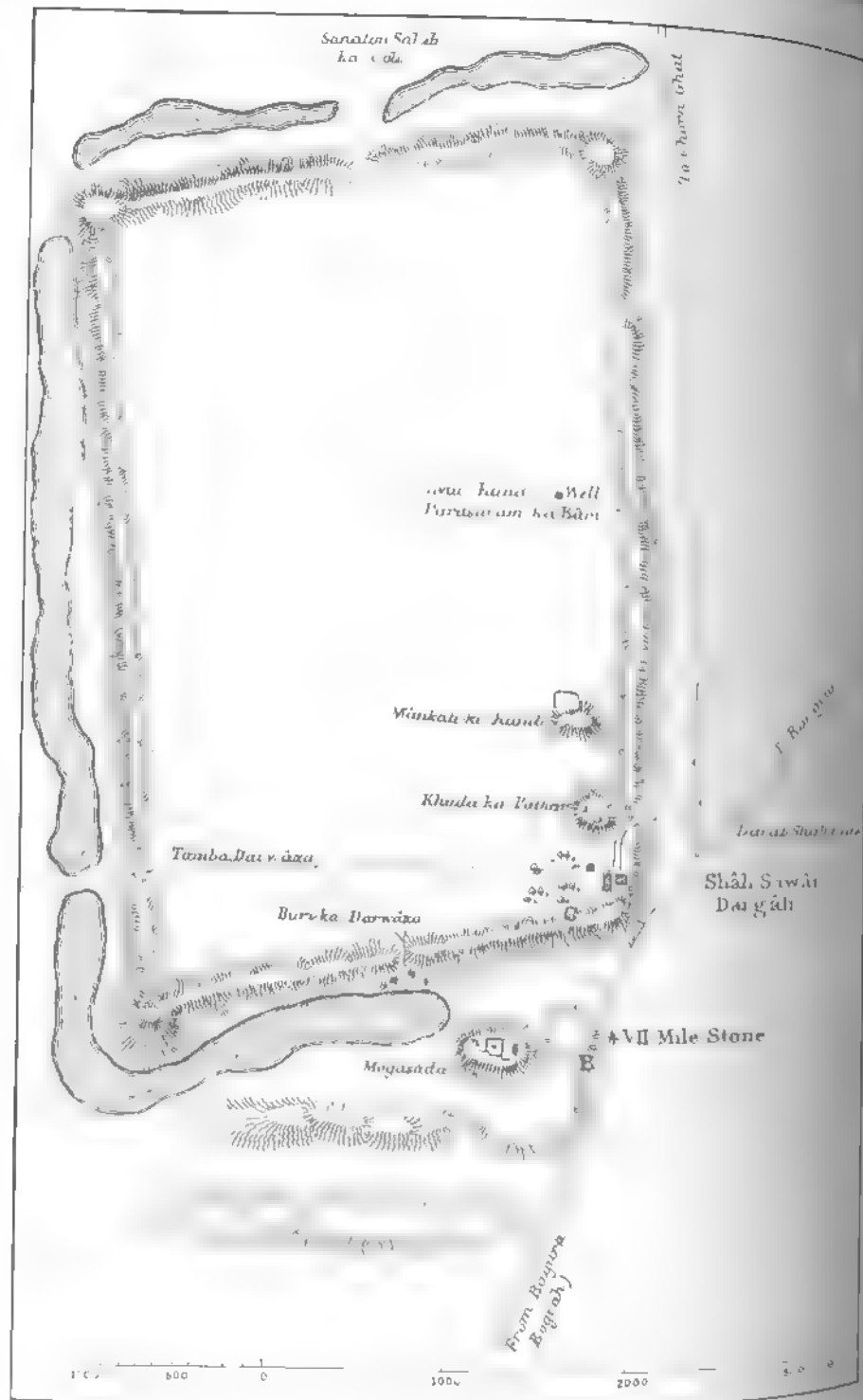


ROUGH SKETCH PLAN



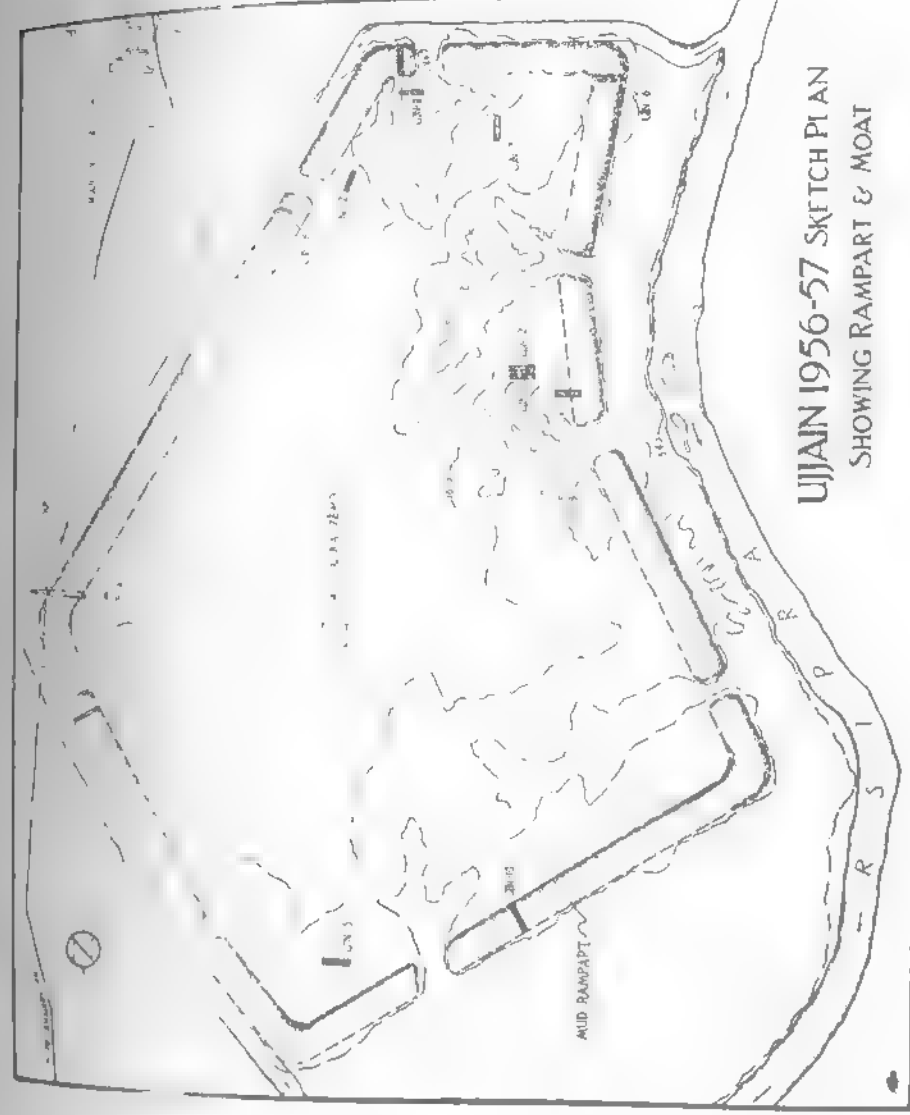
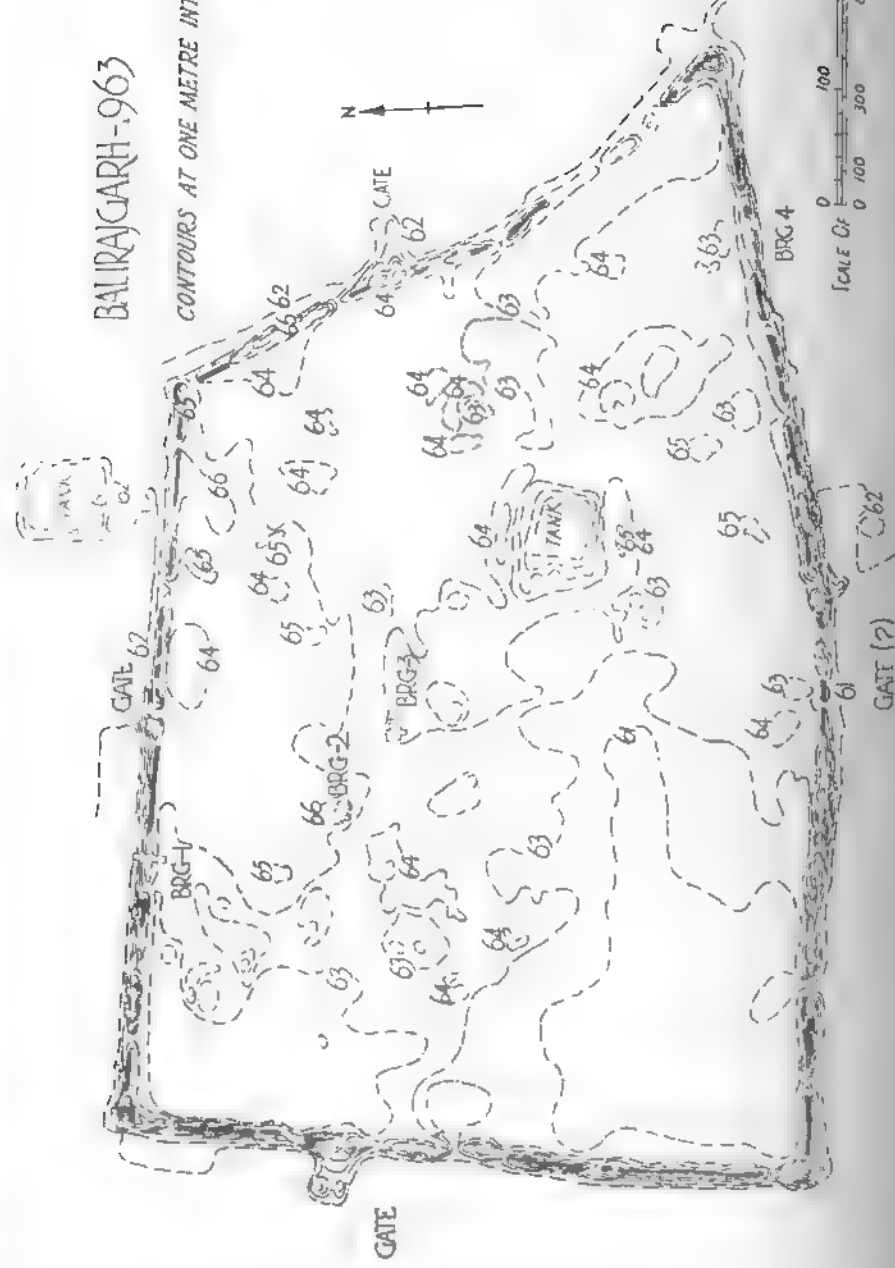
MATHURA 1973
SKETCH PLAN SHOWING
ANCIENT FORT LOCATIONS

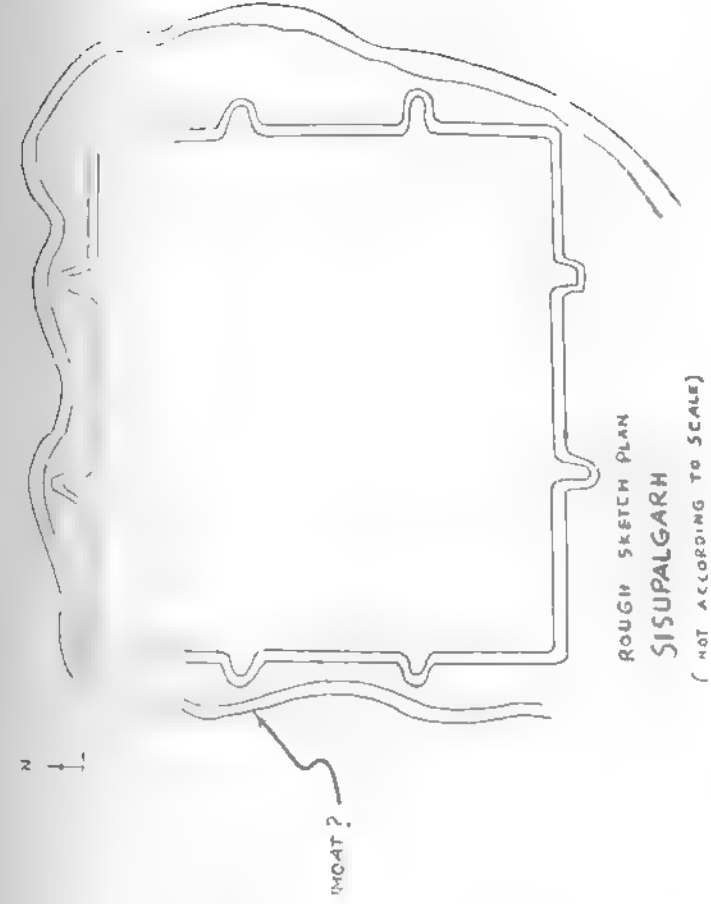
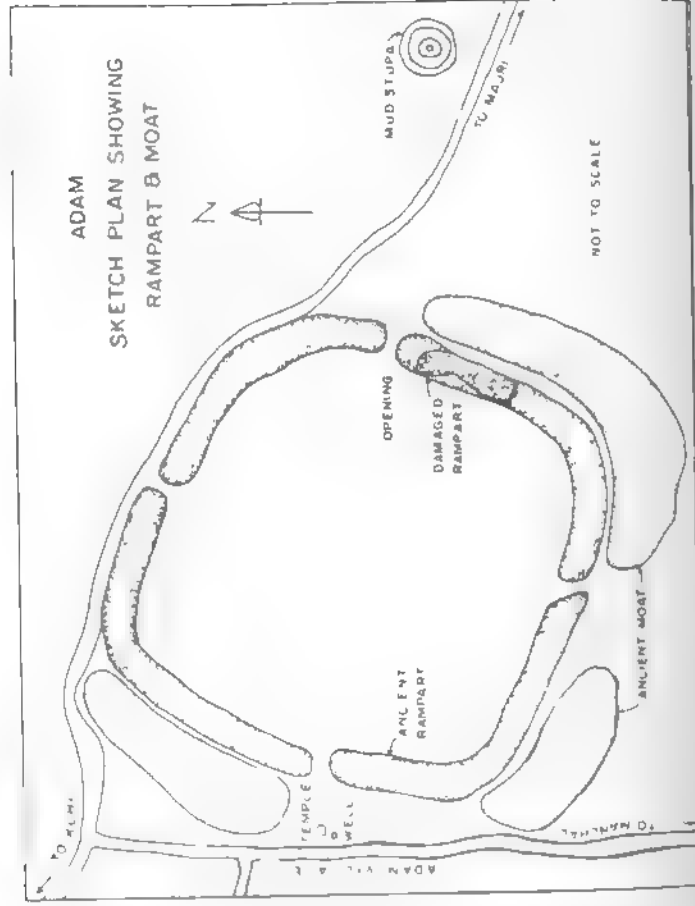


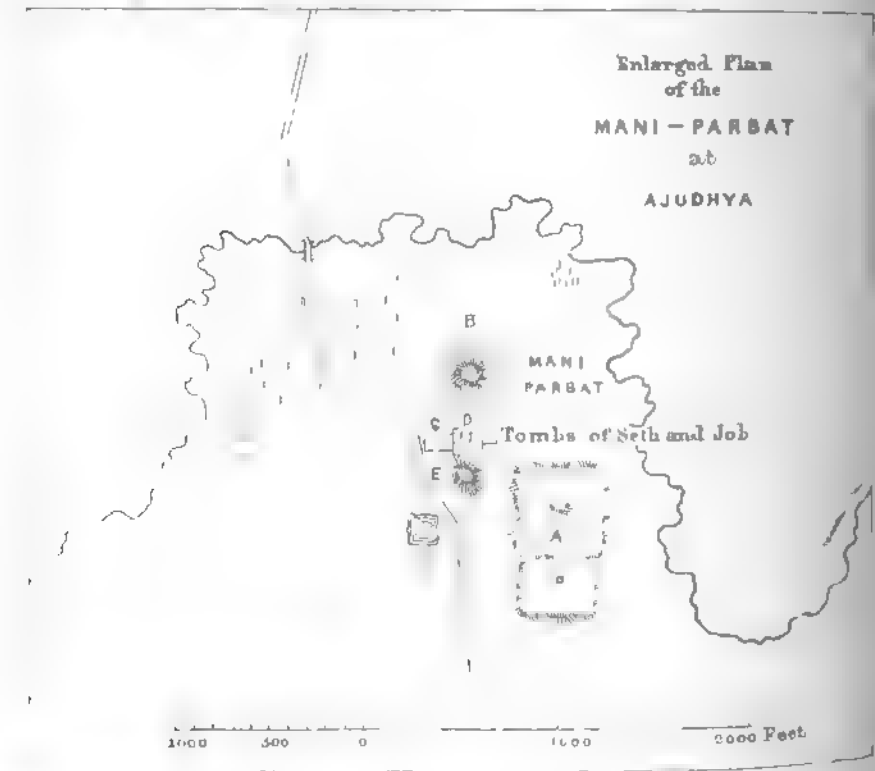
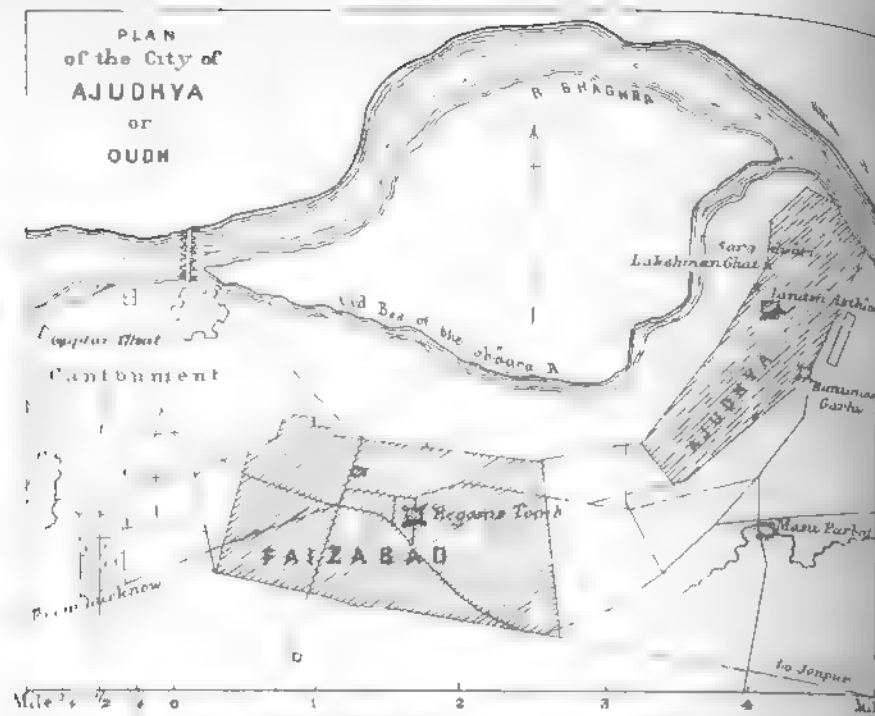


BALIRAJGARH-963

CONTOURS AT ONE METRE INTERVAL







The Ahar excavations in 1961-62 did not yield microliths but the earlier excavations at the site did. Copper was plentiful: rings, bangles, ammonium rods, a knife-blade and four socket-less axes. That copper was smelted locally at Ahar has been suggested by the discovery of copper sheet and slag. Gilund yielded both microliths and fragments of copper. Saddle querns and beads of semi-precious stone (including one of lapis lazuli from Ahar) occur at both the sites. There are terracotta beads or spindle whorls, of biconical or areca-nut shape, with incised decorations at Ahar, and terracotta animal figurines and gamesmen including bulls with prominent humps and long horns at Gilund. Among the crops, rice was definitely grown but it is doubtful whether millet was grown. The animal bones identified at Ahar are those of fish, turtle, fowl, cow, buffalo, goat, sheep, deer and pigs.

There is no radiocarbon date from Gilund but on the basis of the Ahar dates, the beginning of this culture may be placed at around 2500 BC. Perhaps the most significant aspect of the Ahar culture is its effective knowledge of copper metallurgy. It is possible that they were using locally available ores (Majumdar and Rajaguru 1963).

Copper in this area has also been reported from Period II at Bagor on the bank of a small non-perennial river called Kothari in the district of Bikaner. Period I is microlithic while Period III is iron bearing. The cultural traits of Period II comprise pottery, mostly handmade but also wheel made in a limited quantity, circular arrangement of stones, perhaps representing wattle huts protected at the base by stones, microliths which continued to be used from the earlier period but declined numerically towards the end, stone hammers, saddle querns and rubbers besides probable weights for digging sticks, animal bones (usually charred, broken and split open), beads of agate and carnelian, stone pendants and three complete miniatures which have yielded among the burial goods a number of copper objects (one spearhead, three arrowheads and one awl) and one terracotta spindle-whorl. The pottery is said to differ completely from the Ahar ceramic. The contemporaneity of, and interaction between, the settled neolithic communities represented by the sites of Ahar and Gilund and the microlith-using hunter-gatherers typified at Bagor have been noted by Hooja.

The raw materials listed at the Ahar culture sites in southeast Rajasthan include steatite, shell, agate, jasper, carnelian, lapis lazuli, copper/bronze and ordinary stones. The shell objects were locally manufactured, though the source of shell must have been the Gujarat coast. The presence of etched carnelian beads, a single bead of lapis lazuli and the

ments in the study of the chalcolithic cultures in Malwa is the evidence of fire-altars and perhaps temples at Dangwada which has also yielded evidence of bull worship and phallus worship in its chalcolithic stage.

On the fringe of Malwa the Tapti valley is a transitional zone between central India and north Deccan or Maharashtra. Two chalcolithic sites were earlier excavated in this area: Bahal-Tekwada (IAR 1956-57: 16-17) on the Girna and Prakash (Thapar 1964-65) at the confluence of the Tapti and Gomti. The wheelmade, painted black-on-red pottery of Bahal IB is preceded by a predominantly plain grey ware (Bahal IA), recalling the neolithic grey ware of south Deccan. Tekwada on the other side of the Girna yielded three urn-burials and one pit-burial. The first period of Prakash is chalcolithic too on the Bahal model.

Maharashtra

Maharashtra is one of the few areas of the country where the neolithic-chalcolithic context of the region has been worked out in great detail, and one may begin by recalling the first excavations on the Maharashtra chalcolithic at Nasik-Jorwe in 1950-51 (Sankalia and Deo 1955), which were followed by work at Nevasa in 1954-55 (Sankalia et al. 1960). For the present purpose I shall refer primarily to two recent reports, each in its own way invaluable for its comprehensive study: S.A. Sali's *Daimabad* 1976-79 (Sali 1986) and *Excavations at Inamgaon* by M.K. Dhavalikar, H.D. Sankalia and Z.D. Ansari (1988). For a general analytical survey of the total material, Dhavalikar's *The First Farmers of the Deccan* (Dhavalikar 1988) commands attention.

The initial settlement zone, as represented by the distribution of the Savalda culture sites is between the Tapti and the Godavari in north Maharashtra. The date should be around the end of the third and the beginning of the second millennia BC. On the basis of work at Kaothe (Dhavalikar, Shinde, Atre 1990), a 20 ha site with a 50 cm thick occupation deposit, the Savalda culture has been interpreted as being that of a semi-nomadic community. This interpretation is partially based on the postulated similarity between the excavated house types at the site and those of the local semi-nomadic Dhangar community. In both cases the key element is that a sloping roof of thatch was put over a bunch of sticks which were tied together at the top and rested, in a sloping fashion, around a circular oval pit-like floor in the case of the Savalda culture but around an ordinary circular un-plastered floor in the case of the Dhangar community. Bone-tools were profusely used at Kaothe and cattle, buffalo, sheep, goat, pig

and dog were domesticated, as well as some wild animals including different types of deer. Beads of shell, opal, carnelian and terracotta deserve notice and so do a variety of millets (*Pennisetum typhoides*) and two varieties of pulses (gram and moong). The ceramic components include a sturdy red ware with both geometric and naturalistic paintings. At Daimabad the area occupied by the Savalda culture measured about 1 ha but the impression of semi-nomadism, as deduced at Kaothe is offset here by the presence of rectangular mud houses, copper, a microlithic blade industry, miscellaneous bone and stone objects, a limited number of beads of shell, carnelian, steatite and terracotta, a phallus made of agate and a large variety of grains—wheat, barley, pea, lentil, black gram and green gram. The intensity of occupation at the site during this period is indicated by the high phosphorus value of the deposit. In the plan of houses published by Sali (1986: 82) one notes that these houses, some of them as large as 7 m by 5 m and multi-roomed, were open on one side and contained in most cases hearths, storage pits and jars. In some cases they had courtyards in the front, and in one section a lane has been traced. For no apparent reason two houses have been labelled as a 'nobleman's house' and a 'priest's house'. The most prominent feature of the wheel-made Savalda ware is 'the paintings of weapon and tool motifs that have been executed on the surface of mostly thick and crackled slip of the pots' (Sali 1986: 21-2). From Kaothe the primary burials of both children and adults have been reported.

The basic locale of the late Harappans in Maharashtra was in the region occupied by the Savalda culture, i.e. between the Tapti and the Godavari-Provira valleys. The presence of the Indus script (two terracotta button-shaped seals and four potsherds, all with the Indus script) at Daimabad has clinched the issue of its identification. At Daimabad it appears in the second phase of the site and comes to occupy an area as large as 20 ha. No complete house plan has been recovered from this phase, but one of the houses measured 6.5 m by 4.3 m. The existence of a street has been indicated in 1 m thickness of the mud walls of the houses was 30-50 cm. A grave containing fired bricks conforming to the standard Harappan ratio of 4:2:1 in fact contained a primary burial where the extended skeleton was covered by the roots of a fibrous plant was found within the habitation area. Archaeologically an I-chert blade industry, extensive use of copper, therefore takes into consideration the famous Daimabad hoard of copper images and human figures (Dhavalikar 1982), beads, ivory pendant, 16 pieces of a terracotta measuring scale, a highly weathered terracotta scale, various stone objects, wheat, barley, lentil, pea and horse

gram were among the other major components of this cultural level at Daimabad. The size of 20 ha. of this settlement at Daimabad contradicts Dhavalikar's statement (Dhavalikar 1988: 14) that the late Harappan settlements in Maharashtra were 'all small villages, each having a population of about 100-200 persons'.

The third period at Daimabad is represented by the 'Daimabad culture' which covered an area of about 20 ha. and had, as its diagnostic traits, fired, black painted red buff cream ware. Three burials of three types (pit burial, symbolic burial and post-cremation pot burial), a rich chalcolithic and quartz bead industry, beads of carnelian, opal, agate, fine grained red basalt, etc., copper slag, miscellaneous terracotta and stone objects, shell bangles and a number of crops comprising wheat, barley, lentil, grass pea, horse gram, hyacinth bean, green gram and black gram comprised the other excavated materials.

The Malwa cultural phase constitutes the fourth period of the Daimabad sequence. This is also the general period when one notes the beginning of chalcolithic settlements in the Vidarbha region of Maharashtra at the sites of Talajapu, Garhi in the Purna valley, part of the Tapi tributary system, IAR 1984: 85-48-50. Sal's description of the Malwa phase houses at Daimabad classifies them into craftsmen's houses (a coppersmith's house) and religious and residential establishments. A number of sacrificial altars have been found in these small walled houses with well plastered floors. About twenty Malwa houses were exposed at Inamgaon and although built close together they were separated by a wide space of 1-2 m. They were all large, rectangular, 7 by 5 m structure with a partition wall, a low mud wall and a thatched roof. Inside the houses were a large oval fire pit with raised sides. The grain was stored in deep pits, 0.5 m diameter and 1 m deep and also in bins of wicker work which were placed over circular mud platforms 1.5 m diameter. Some people, however, lived in round huts. Those who were excluded from the poor live in pit dwellings (Dhavalikar 1988: 14). In addition to the chalcolithic industries, evidence of copper metalurgy, an extensive stone beads, there were the remains of wheat, barley, lentil, horse gram, beans, hyacinth bean, black gram, green gram, etc. The burials of this phase, of which sixteen have been excavated, were urn burials and pit burials.

The settlement data of the succeeding Jorwe phase in Malwa also have been closely studied by Dhavalikar (1988). At Daimabad the settlement size increased to 30 ha. Among the 200 odd reported Jorwe settlements a vast majority were of a size ranging from 1 to 3 ha. (1988: 14).

lation 200-600). Some were very small, 0.5-1 ha. in extent. Some of the small sites, located at a distance of about 2-3 km from the main village site, could be like the present *wadis* of Maharashtra, where, for the convenience of agricultural operations, two or more agriculturist families lived during the agricultural seasons while spending the summer at the main settlement.

The thatched wattle-and-daub houses of the Jorwe phase at Inamgaon vary between 5 m by 3 m and 7 m by 5 m, the larger ones being divided in most cases by partition walls.

Inside the house would be a small oval fire pit, sometimes with high clay walls to serve as a protection from wind, whereas outside in the courtyard invariably were across a large oval fire pit (1 by 0.5 m) which was probably used for roasting hunted animals. Almost every fire pit has a flat stone in the centre at the bottom which was daubed with mud to serve as a support for the cooking vessel. Very often inside, but rarely outside also, there was a pit silo 1 to 2 m in diameter and equally deep, and lined with lime for storing grain. In addition there was a round mud platform with 1.5 m diameter and 10 cm high which served to support a storage bin. The house floor was made of rammed clay with silt and fine sand spread on it very gradually and even the courtyard was well made. The domesticated animals, sheep, goat and cattle, were tethered in the courtyard as indicated by the nitrogen content of the soil (Dhavalikar 1988: 20).

In the late Jorwe phase, which Dhavalikar interprets as belonging to an early phase, are found more circular houses and clusters of such houses with a common courtyard. What is singularly interesting is that in the early Jorwe phase at Inamgaon there is evidence of an irrigation channel (1.8 m wide, 3.5 m deep and 4 m wide) and an embankment (2.40 m wide and 2.40 m high) to the west of the main habitation area. Dhavalikar (1988: 22) also suggests that both hand ploughs and seed drills were used in agriculture. Pottery kilns, gold ornaments, copper slag and crucibles, the kilns, terracotta figurines which can be interpreted as gods and goddesses, some signs of animal and fire worship, extended burials for adults and urn burials for children, etc., complete the picture of chalcolithic village life as we have in the Jorwe phase in Maharashtra. This phase is supposed to have come to an end around 1000 BC or later. The ceramic and other material links of the chalcolithic Maharashtra phase have been cogently summarized by Lahiri (1992: 181):

The Jorwe phase in Maharashtra has significant contact with central India from the late Harappan phase. At the Malwa phase and in fact a lot is known for a long while about the Malwa phase and cultural elements perceived throughout that region. A lot of Malwa phase material has been brought to that region. The Malwa phase in Maharashtra showed an intimate relationship with a wide area.

in the presence of late Harappan Lustrous Red Ware at a number of sites in the sub-region stretching from Kottai near the western coast to Talajpur Ghat in the Anaravati district. By the Jorwe period, however, Maharashtra became oriented southward or entered with Jorwe ceramic elements found as far as Andhra Pradesh and southern Mysore.

Karnataka, Tamil Nadu and Andhra

This is broadly the area of what is known as the 'southern neolithic culture', with geographical variations in each of the three component 'states'. The Karnataka plateau has two sections—the northern section and the Mysore plateau. The Krishna and the Tungabhadra run through the northern section constituting an interfluvium called the Raichur Doab, a sort of corridor from the Maharashtra plateau to the south. Here the terrain is one of rolling plains interspersed with granitic boulders and hills, and with a reddish sandy soil supporting a thorny scrub vegetation. On the Mysore plateau there are two divisions—the Malnad and the Maidan. The Malnad borders on the Western Ghats and is hilly and forested, while the Maidan is an area of rolling plains with low granitic hills. Both parts of the Mysore plateau were peopled by prehistoric villagers and so was the Raichur Doab. The climate at present tends as a whole towards semi-aridity, the rainfall varying from about 25 inches in the north to 30-5 inches in the Mysore plateau. The laboratory analysis of the relevant deposit from the Kupgal East mound in the Raichur Doab suggests that the climate at the beginning of the neolithic phase in the area was slightly more wet and 'better wooded with thorn and scrub forest interspersed by large areas of grassland' (Majumdar and Rajaguru 1966: 14). The neolithic sites of Tamil Nadu as studied by B. N. Dasgupta (1957) fall in the plateau region of the northwestern part of the state—mainly North Arcot and Dharmapuri districts, although neolithic tools have been found scattered in various parts of the state. Beyond the coastal plain and the Eastern Ghats is mainly the tract of Telengana and Rayachota.

Neolithic sites abound in the region around Tekkalakota (see M. S. N. Rao and K. C. Malhotra 1965: 7) reported recently. The flat top, or granitic hills of the region, castellated hills of Foote (1914, section VI) 'castellated hills of the Deccan' and the river banks seem to have provided a suitable occupation ground for the neolithic settlers who have been investigated since the days of Foote and whose principal excavated sites now include Brahmam (Wheeler 1917: 48), Maski (Inapar 1957), Palkina (Allchin 1960), Utnur (Allchin 1961), Kupgal (Majumdar and

Rajaguru 1966), T. Narasipur (IAR 1961-62, 1964-65), Hallur (M. S. N. Rao 1971), Nagarjunakonda (Subrahmanyam 1975), Veerapuram (Sastri et al. 1984), Ramapuram (IAR 1981-82, 1982-83), Hemmige (M. S. N. Rao and Nagaraju 1974), Sanganakallu (Subbarao 1948, Ansari and M. S. N. Rao 1969, Sankalia 1969), Palavoy (IAR 1966-67), Paiyampalli (IAR 1964-65, 1967-68), Tekkalakota (M. S. N. Rao and Malhotra 1965), Kakkal (Paddayya 1973), Banahalli (IAR 1985-86, 1986-87), etc. The northern Karnataka neolithic sites have been considered in detail by A. Sankhara (1968, 1970). In Andhra Pradesh V. Ramu Reddy (1975) has made a useful contribution.

Sites like Sanganakallu and Kupgal provide a background to the growth of the neoliths in the area. Period I at Sanganakallu consists of coppers and chopping tools, scrapers and prepared flakes, all highly patinated and made of trap dyke material. It was succeeded (Period II) by a microlithic industry characterized by quartz flakes, cores and lunates and scrapers. It is only in Sanganakallu III that one finds polished stone axes. At Kupgal there is no separate microlithic horizon between the two (as at Sanganakallu) and between these two phases there was a formation of dark brown soil which might indicate a considerable time gap between the two levels. As far as the neolithic level itself is concerned, an earlier metal-free horizon marked by handmade ware is probable, although by no means positively proved. There were both circular and rectangular wattle-and-daub houses, reinforced in some cases by low walls of granitic blocks. Both the pottery and ground stone industry show considerable variations, although at the base the pottery was either handmade or turned on a slow wheel.

At Kupgal alone the pottery types are five in number with thirteen different forms. At Palkina (see Allchin 1960: 85-95) classified the neolithic ground and pecked stone industry into five main types—edge tools, pointed tools, rubbers and grinders, hammers, bored maceheads, etc.—and with various sub-types. Paddayya (1973) found 9 main ceramic types with 33 vessel forms, although his classification of neolithic stone tools was into 'edge' and 'non edge' types. Associated with the neolithic site at Kupgal is a microlithic blade element comprising flint, quartz, chert, etc. Copper/bronze is never profuse, but it occurs in most of the sites. Among other objects should be mentioned beads of carnelian, semi-precious stones, terracotta, long terracotta neck-rests, terracotta neck-rests, and an elaborate gold ear ornament from the earliest phase of Tekkalakota. The data on the crop and agriculture are meagre, although ragi millet has been found at Hallur. At

Tekkarakota there is horse gram. Extensive remains of cattle, sheep/goat and other animal bones point to the importance of domestic animals in the economy. This importance is also reflected in the variety of interpretations of the neolithic ashmounds found in this region (cf. Allchin 1963). However, it is slowly emerging that these so-called ashmound sites are in fact associated with, or rather are a part of, normal habitational settlements (personal information from Dr PadJajya).

A full fledged chalcolithic complex occurs in Andhra. Among a large number of sites discovered in the Kurnool area, mostly large open-air settlements, Sanganapalli (IAR 1967-68) is a single culture site yielding a profuse quantity of painted pottery—usually black on-red with channel-spouted bowls as a distinctive shape, stone blades with fluted cores, lime-plastered house floors, beads of steatite, shell, etc. Another site of this genre, Ramapuram (IAR 1981-82, 1982-83), has been excavated in the same area. The chalcolithic complex of Andhra has been linked to Malwa and Maharashtra, which is possible (discussion in Lahiri 1992: 193-4). The Andhra neolithic element is no doubt part of the same complex in Tamil Nadu and Karnataka, the latter region standing in more close relationship with Maharashtra from where the Jorwe ware came to this region and persisted till a much later period. Chronologically, the large number of radiocarbon dates, when calibrated, show a spread from the first half of the third millennium BC to the second half of the second millennium BC. The Andhra chalcolithic (cf. Ramapuram) possibly emerged around 2000 BC.

Eastern India

Extending over the territorial units of Bengal, Orissa and Assam, physiographically eastern India is not a homogeneous unit. Parts of Bihar and Bengal are dominated by the Ganges but flanking its course on the west is the Chotanagpur upland. A highland also borders the delta areas of the Mahanadi and Baitarani in Orissa in the north. Assam lies beyond modern Bangladesh—a mesh of ever-shifting rivers—and except for a sixty-mile wide stretch along the Brahmaputra it consists of a succession of jungle-clad hills.

Neolithic celts have been picked up from the surface from almost the entire area except for the alluvial valleys and deltas. The collection has been large enough to warrant divisions and subdivisions (Krishnaswami 1960). On the basis of the typological studies it has also been possible to speak of two neolithic culture provinces—one comprising Bengal, Bihar

and Orissa, and the other Assam, itself with a number of subareas (Dani 1960: 41-7). Each of these provinces is supposed to possess two technological groups. Group I in Bengal-Bihar-Orissa 'consists of typically Indian types' (Dani 1960: 223) and the supposedly later Group II shows 'mixture with foreign types that are well known in southeast Asia' (ibid). Group I of the Assam complex includes 'indigenous tool types almost restricted to the various zones of Assam' (ibid) while Group II consists of 'common types, wholly foreign, identical with some of the types of Yunnan and Burma' (ibid). No chronological difference has been suggested between these two groups. E. C. Worman's (1949) postulate of a total cultural affiliation of the eastern Indian neolithic with southeast Asia has been reduced by Dani to one of 'contact and borrowings natural to countries so close to one another' (Dani 1960: 223).

Apart from inferences based on typology, there is little positive evidence of the beginning of farming in this wide area. In Orissa, Kuchai (IAR 1961-62: 36) in the Burhabalang valley has yielded very gritty, micaceous, handmade pottery along with a few ground stone axes and some patinated flakes of sandstone. The assemblage is undated but it is preceded by late stone age materials. In Orissa again, the site of Golbai Sasan (B. K. Sinha 1992, in the Puri district) has yielded neolithic celts, bone tools (including a small barbed harpoon) in association with a number of wheel-made pottery types. This assemblage is likely to belong to the second millennium BC. To the far east, in the hills of North Cachar in Assam, a site called Daojah Hiding (Sharma 1966) has revealed a single layered cultural deposit where four varieties of sherds (cord marked, incised, stamped and plain red wares) occur alongside a number of stone axes which comprised shouldered celts, quadrangular flzes, rectangular and oval sectioned small axes and some crudely flaked axes, polished only at the cutting edge. The date remains uncertain but regarding the all titles of the site it has been said that 'The cord marked pottery... belongs to eastern Asiatic neolithic tradition. The data are not sufficient to comment on the affinity of the plain red pottery, but there is a suggestion that it may be related to the Yang Shao red pottery of the Yangtze valley, the southern extension of which can be traced as far as Szechuan. It is possible that this pottery reached Assam from that direction' (Sharma 1967). Coarse handmade pottery occurs successively with celts and stone axes at Selbaleni-2 in the Garo hills, but the perspective of the site, as at Daojah Hiding, still remains uncertain.

Neolithic pottery has yet emerged from Marupatala, although the

quaternary deposits of the state are gradually coming to our attention (cf. Singh and Singh 1990). T.C. Sharma (personal discussion) claims the presence of a Hoabinhian horizon in Meghalaya, but again, the data have remained unpublished.

It is possible to argue in favour of the existence of an early village level at several sites in West Bengal and Bihar, notably at Pandu Rajar Dhibi (West Bengal), Chirand, Taridih and Senuar (all in Bihar). The relevant cultural material in Period I of Pandu Rajar Dhibi (Ghosh and Chakrabarti 1968, Dasgupta 1965, IAR 1984-85) consists of primarily handmade wares, microlithic blades, house floor levels, fractional burials and husk impressions of rice in the core of pottery. No metals present. These could probably be dated to the first half of the second millennium BC. Similar but more extensive evidence occurs at Chirand (Narain 1971, 1979, Varma 1971) in the middle Ganges valley in north Bihar. This level at the site has yielded a number of pottery types (red, grey and black wares, some with post-firing paintings), evidence of circular reed and mud huts with properly rammed floors, a terracotta industry, a large quantity of antler and bone tools, beads of semi-precious stones and remains of moong, wheat, lentil, barley and rice. Perhaps a limited amount of copper is also present. The date is uncertain but should be in the second half of the third millennium BC. At Senuar in the Kaimur foothills of the Rhotas district, Birendra Pratap Singh (1990) found a 'pure neolithic' level (1.5 m thick deposit) with three principal ceramic types—red ware, burnished red ware and burnished grey ware—all of which are generally wheelmade. A cord-impressed type of pottery—usually associated with the neolithic in the Vindhyas—is also found in a comparatively limited quantity. In addition to a rich microlithic industry of chert, chalcedony, agate, quartz, etc., there are some triangular polished celts, bone tools, semi-precious stone beads and miscellaneous stone objects such as hammerstones, saddle querns, pestles, etc. One also finds house floors, burnt mud chunks with reed impressions, pottery discs and rice, barley, pea, lentil and some millets. Wheat, grass pea, kodon (*Paspalum scrobiculatum*) and vetch (*Vicia sativa*) appear in the 'subsequent upper layers'. Rice is said to be the principal crop. The sub-period IB at the site (2.02 m deposit) has been called 'neolithic-chalcolithic' on the basis of the appearance of copper comprising a fish hook, a piece of wire, a needle and an indeterminate object. A fragmentary rod of lead has also been found. The piece of copper wire has been found to be made of almost pure copper and the lead fragment has been found to contain a high amount of silver—0.20 per cent. There is not much change in the other cultural

items but bread-wheat, gram and moong are added to the list of crops. The occurrence of twenty-five faience beads needs attention. The deposit as a whole certainly goes back well into the third millennium BC. Not much is known about the neolithic level at Taradih (IAR 1986-87, 1987-88) except that this has two phases, comprising primarily handmade red pottery in the first phase.

A still earlier phase of the neolithic possibly occurs in the eastern section of the Vindhyas. There are three early (7th, 6th and 5th millennia BC) sites from the site of Koldihawa in the Belan valley in the Allahabad district from a level characterized by a microlithic industry, a plain red ware and an ill-fired, crude black and red ware. Doubt is cast on these dates. One remembers that the succeeding phase at this site fits in well with the second millennium BC chalcolithic phase of eastern India. On the other hand the Belan valley and the adjacent Vindhyan country have a well-established and continuous prehistoric sequence culminating in such advanced mesolithic/protoneolithic sites as Chopani Mandi showing cattle hoof impressions and wild rice, and when looked at from this point of view the early dates from Koldihawa seem to be quite acceptable. However, the Vindhyan neolithic in the Kanhan valley goes back only to the fifth millennium BC (when calibrated). There is need for more precise work on this problem in the Belan valley before the chronology of the Vindhyan Belan neolithic can be objectively assessed. That it was not an isolated phenomenon can easily be deduced from the discovery of neolithic sites in the Kaimur foothills and from the spread of cord-impressed pottery as far south as Taradih at Bodhi Gaya.

The chalcolithic phase in the archaeological sequence of eastern India covers a very large number of sites in eastern U.P., Bihar, West Bengal and Orissa. Its hallmark is an assemblage characterized principally by a plain and plain black and red ware which is found in association with a number of other ceramic types such as black and black-slipped ware, red-slipped ware, a perforated ware, buff ware, etc. Fine painted designs usually occur on the red-slipped ware whereas black and red and black-slipped ware is painted usually with short strokes in white. Generally this ware is found to possess copper, a microlithic industry, terracotta, sawtoothed antler pieces, semi-precious stone beads, reed and husk impressions, the principal crop, miscellaneous terracotta and stone objects, etc. The Orissa level has not yet been extensively excavated (cf. Dasgupta in IAR 1985-86: 62), and in eastern U.P. the number of sites is still limited (cf. Sohgaon in IAR 1961-62; also Chaturvedi 1985). In Bihar and West Bengal, there is a very large number of

sites, the number of reported sites in West Bengal alone being more than sixty (Chakrabarti et al. 1993). Their size-range varies from 1 acre or less to about 8–9 acres, with most of them falling in the lower bracket. The distribution of these sites conforms to the distribution of modern village settlements in their respective areas, suggesting a clear continuity of agricultural history from the protohistoric phase onwards. It was also a phase of substantially long occupation, at Chirand the chalcolithic phase (Period II) was about 5–50 m thick at places. There is no doubt that the chalcolithic phase at Chirand goes back to the first quarter of the second millennium BC. The most impressive evidence of crops has occurred in the chalcolithic context at Senuar (B. P. Singh 1991): rice, barley, dwarf wheat, bread wheat, sorghum, millet, chick pea, green gram or moong, field pea, lentil, horse gram, grass pea, sesamum and linseed.

Upper Gangetic Valley

The starting point is a cluster of late Harappan settlements in the upper Doab, evidence of which has been discussed in an earlier chapter. Otherwise, the earliest evidence of village occupation in the upper Gangetic valley is provided by a context which yields an ochre-coloured pottery (OCP). Since B. B. Lal (1951) first identified this in an apparently unassociated context at Rajpur Parsu and Bisauli, it has been found in the basal level of a number of sites spread between the upper Doab (cf. Hastinapur, Atranjikhara) and the lower Doab (cf. Srirangapur). The most significant range of evidence comes from Sapta and Atranjikhara. Sapta (Chakrabarti 1972) has yielded from this level a sword and a harpoon, two types missing from the Gangetic valley copper hoards, thus vindicating an earlier hypothesis of Lal (1951). At Atranjikhara this basically red-sapped pottery, which is generally found in originally water-logged deposits and thus in an ochreous condition, was associated with the evidence of wattle-and-daub houses supported by wooden posts of 'babool', 'sissou', 'sal' and in rare cases 'char' pine. Evidence of rice, barley, gram, khesari and cattle bones with cut marks indicates the diet of the people. R. C. Gaur (1983: 74) argues that 'the people grew two crops a year—rice in summer and barley along with gram and khesari, both legumes in the winter'. He further points out, 'contrary to the general belief, the Doab at that time perhaps was not covered with dense forests. Its natural vegetation ranged from desert thorn to ravine thorn forest with scattered trees, the removal of which was not very difficult'. The next phase at the site is marked by black-and-red ware, cores and waste flakes of semi-precious stones,

copper objects, beads of various materials, pottery discs, and wheat, rice and barley. The copper objects comprised a ring and three beads. This phase was followed by the iron-using, painted grey ware culture (PGW). Another contemporary site in the same region is Lal Qila (Gaur 1973) which is found to possess a number of mud floor levels. The use of mud-bricks was usual but burnt bricks were also used in a limited quantity. Unless recovered from a water-logged deposit, the red pottery, the main form of which include storage jars, vases, bowls with handles, etc., is well-fired, sturdy, fine-sipped and occasionally washed. In the case of the painted specimens the designs are mainly geometric, though naturalistic motifs, including the one which shows an elongated and horned humped bull, are not rare. One notes the occurrence of incised designs also. Some sherds bear graffiti marks which have been classified into ten different types. The copper objects comprise a pendant and a bead, a piece of an arrowhead, a broken part of a celt and an object of indeterminate shape. Besides the usual assortment of wheels, discs, bangles, etc., the terracotta objects include two female figurines. There are also beads of carnelian and soap stone, an agate point, stone querns, net sinkers, bone arrowheads and points. Barley, rice and pulses have been found in this context. Gaur (1983) dates the OCP phase at Atranjikhara in the first half of the second millennium BC. On the basis of thermoluminescent dates Lal Qila has been dated between 2030–1730 B.C. As far as the general settlement pattern is concerned, K. N. Dikshit (1979) has discussed its distribution in detail in the upper Doab where an average site is less than 2 ha. What is more important is that the OCP culture may be linked to the late Harappan culture of the area. Dikshit, in his discussion of the problem, writes that the 'Ochre Coloured Pottery types, such as dish on stand with deep rim, rim basin, hollow lid with central knob and large storage jars recovered from the Upper Doab are having typological similarity with the Harappan assemblage, including Bara found in this region'. At the same time he points out that there is no other similarity and that 'the pottery types of OCP in Central Doab, on the other hand, do not show even the slightest typological similarity'. However, he points out that 'the typical geometric incised designs noticed at Atranjikhara and Lal Qila possess a close resemblance with those found at Bara'. It is probable that this culture is derived in some way from the various late Harappan and related assemblages of Pan-Ab-Haryana and upper Doab. At Atranjikhara the succeeding phase of black and red ware, associated with the fine black-sipped wares, is said to be thin but this has been dated to the second millennium BC. It has been found that those copper

rings and beads, microlithic waste flakes and cores and teak (*Tectona grandis*) which reputedly had central India as the northern limit of its distribution. In the Kanpur district M. Lal (1984) found nine black and red ware settlements (six below 2 ha. and three between 3 and 5 ha.) with an average spacing of 29 km between them. Iron appears in the next phase at Atranjikhhera and elsewhere in the upper Gangetic valley.

General Discussion

At a general level the neolithic-chalcolithic data, of which only a very brief outline has been offered above, suggest a few specific points which may be illustrative of the basic pattern of this newly emergent village India of the third and second millennia BC. To begin with, an effective rural-agricultural base was created, all the villages being securely established. The extensive range of their wheelmade pottery, stone tools, occasional but by no means unfamiliar objects of copper, evidence of crops and animal bones (where available), beads of semi-precious stones and other miscellaneous objects including house remains seem to underline this point clearly. More significantly, the entire evidence is suggestive of their having deep roots in the soil. These neolithic-chalcolithic farmers worked out a relationship with their respective areas which persists till today. In all cases, the location of settlements, the house-types and housing-materials used are still current among the villages in the same regions. To take only a few randomly chosen examples, the location of Ahar culture settlements in southeast Rajasthan 'pre-empted later period agricultural settlements in their choice of locale' (Hooja 1988: 75). Also, the Ahar practice of strengthening the mud house walls with quartz nodules finds an exact parallel among the present village houses of the area (Sankalia 1974), while at Tekkalakota the circular huts of the neighbouring Boyas can be matched by excavated specimens (M. S. N. Rao 1965). The Navdatoli evidence of the juxtaposition of oblong and circular houses assumes meaning in the light of the modern Indian practice of building circular houses along with oblong ones for the storage of grain or hay, or for the occupation of low caste groups (Leshnik and Dhavalikar and others have, as we have seen, emphasized how many settlement situations in modern Maharashtra are rooted in the regional chalcolithic context. A more crucial point in this direction is that the crops which were cultivated by these prehistoric villagers are still being cultivated in their respective regions. Listing the grains from Navdatoli (two varieties of wheat, rice and several varieties of pulses), Sankalia

(1974) points out that the same grains are cultivated in the modern Nimad district of Madhya Pradesh where Navdatoli is located. The extensive remains of rice from the chalcolithic sites of eastern India suggest that the present primary dependence of this area on rice can be dated as early as the third millennium BC. The eminence of Maharashtra as a silk producing area finds reflection in the chalcolithic level of the area where both cotton and flax occur. The varieties of millet and pulse of the neolithic south are still grown by the southern farmers. B. P. Sahu (1988) has shown how the importance of cattle which can be easily observed from the animal remains of the neolithic-chalcolithic contexts persists in the early historic levels. Irrespective of the area, the picture is remarkable for its continuity.

It would be wrong to assert that this continuity is true only as regards the material details of village life. It seems that there is an appreciable element of continuity in some aspects of religious life too. We have noticed the presence of 'fire altars' and 'temples' in the Malwa cultural level at Dangwada. In this connection both Sankalia (1974) and Dhavalikar (1988) have interpreted some terracotta finds of the Maharashtra chalcolithic in terms of a number of still continuing religious beliefs in Maharashtra. The presence of realistic representations of the phallus at some sites is noteworthy.

At this point it may be emphasized that the deep roots which these prehistoric farmers struck should rule out any attempt to explain their origin purely in diffusionary terms.

Secondly, none of these peasant groups developed in complete isolation. On the basis of the use of different types of raw materials by these cultures and their probable source-areas, this aspect of the neolithic-chalcolithic cultures has been worked out in detail by Nayanjot Lahiri (1972) and following her, we may here refer to only a few points. In the third millennium BC Harappan period there developed lines of movement through Kutch, Gujarat, Malwa, Gujarat and Maharashtra. Eastward red ware, etched stones and copper beads and marine shells from Anur could come only from Gujarat and possibly through both Malwa where Ahar sites are found and Gujarat. The movement between these areas. Both Malwa and Gujarat were penetrated from Gujarat with the Tapti valley as the main passage-way in the dissemination of the Harappans. The Tapti valley runs through the northern sectors of Maharashtra. The Tapti valley is the main link between Malwa and Maharashtra. According to M. S. N. Rao (1965) the Tapti valley was the main passage-way for the movement of the Harappans from the west. Anne Ingar and

Pune, another route towards Aurangabad and the third route towards Vidarbha. From Maharashtra the road to south Deccan or the Karnataka plateau was open in several ways, and in a different direction links between western India and Andhra can be taken back to the Malwa cultural phase, 'whose ceramic elements are found in the Puslapadu and Patapadu industries'. There were movements across the south Indian peninsula as a whole, and especially in its plateau section. In north India virtually the whole of the Indo-Gangetic plain was thrown open and came to be closely interlinked.

The development of such routes also implies that there was a lot of interchange of raw materials of different types between different areas. Metals no doubt constituted one of the most obvious items of such exchange, along with the various categories of semi-precious stones necessary for bead-making. The material used for the manufacture of beads at Navdatoli alone comprised as many as twelve varieties—agate, amazonite, carnelian, chalcedony, faience, glass, jasper, lapis, sandstone, steatite, shell and terracotta. Usually, as a recent study of the West Bengal chalcolithic context (Chakrabarti et al. 1993) has shown, this trade must have had both local and inter-regional forms. In the case of some metals and some varieties of stones inter-regional trade was necessary; otherwise trade carried on at the local level was enough to take care of the needs of these self-sufficient village farming communities.

It is not easy in this context to comment on the social institutional framework of the period. A two-tier settlement hierarchy is noticeable everywhere, and one may reasonably postulate the existence of regional centres. Dhavalikar (1988) suggests the emergence of a 'chiefdom' society on the basis of such a settlement hierarchy, and he may well be right. What I find more intriguing is that most of the neolithic-chalcolithic distribution areas conform roughly to the modern geographical entities. This may suggest the emergence of nascent political units.

HYPOTHESIS REGARDING THE ORIGIN OF THE NEOLITHIC-CHALCOLITHIC CULTURES IN INNER INDIA

The deep roots which the various neolithic-chalcolithic cultures of inner India, i.e. to the east of the Delhi-Aravalli-Cambay axis, show in their respective areas rule out any explanation of their origin in purely diffusionary terms. Here I shall try to put forward a coherent explanation for this. The cultures concerned are those from southeast Rajasthan to

south Deccan and Andhra on the one hand and from the Indo-Gangetic divide and the upper Doab to east India on the other. The preliminary points in this connection are as follows:

1. Although some of these cultures could have come into existence in the second half of the third millennium BC—and in the case of the Vindhyan neolithic in the Kanjhun valley this date may even go back to the fourth millennium BC—the rich cultural details which we have perused belong by and large to the second millennium BC. In other words, in the forms in which we primarily know them, they are contemporary only with the late Harappans.
2. So, when the Indus civilization developed around 2700 BC in the Hakra valley in Cholistan, what was the condition in the rest of the subcontinent, especially in the segment to the east of the Aravallis? Or, when the early Harappans and the earlier Hakra ware culture people were in the Cholistan area and the areas to the west, what was the cultural condition like in inner India?
3. The only possible answer to this question is that there were only hunter-gatherers then in inner India (with possibly the exception of the Belan valley and the Vindhyas).
4. The evidence from a number of hunting-gathering sites in inner India indicates that the domestication of animals and incipient food-production/plant utilization were components of this primarily hunting-gathering stage of the economy. Bager in east Rajasthan, for instance, shows a mesolithic level dating from the fifth millennium BC. The utilization of plant resources is suggested by the presence of querns and rubbing stones and the animals domesticated were cattle, sheep and goat. At Adungarh in central India near Hoshangabad in the Narmada valley there were domesticated cattle, sheep and goat. The site of Chopani Mando in the Belan valley shows an advanced mesolithic stage, wild rice, hoot marks of cattle rubbing stones, rubbers, mullers, querns, etc. The date of Chopani Mando may fall in the ninth-eighth millennia BC.
5. The agricultural settlers in the greater Indus valley, especially in the Hakra stretch, could not have looked only towards the western hills, Sind or the Indus valley for their resources; they were likely to have explored the east too and come into contact with the hunter-gatherers of that region. The fact that they were interacting with the hunter-gatherers is clear from the cultural situation of Ganeshwar, the origin of which antedates the mature Harappan phase. The

Ganeshwar sequence makes clear that it was the local hunting-gathering 'mesolithic' group which took to mining and smelting copper to meet the needs of the pre-/early Harappans.

6. The mature Harappans were also interacting with the Aravalli line in northeast Rajasthan, i.e. with the Ganeshwar area, but they were present in the Indo-Gangetic divide upto Haryana on the one hand and in Gujarat on the other. These very locations open up possibilities of close interaction with inner India, and it is intriguing that etched carnelian beads which are a characteristic mature Harappan bead-type have been found both at Ahar and Atranjikhera. S. R. Rao (1979) has noted the occurrence of teak at Lothal, which possibly came from south India, a region also known for its amazonite and gold.
7. This process of interaction became certainly more obvious in the late Harappan phase when there were many late Harappan settlements in the upper doab and north Maharashtra and certainly some of these settlements were also present in Malwa. The late Harappans, as I have argued before, merged into the main flow of cultural development in inner India.

On the basis of the facts adduced above it can now be argued that the neolithic-chalcolithic cultures of inner India were the results of interaction between the pre-/early Harappan, mature Harappan and late Harappan distribution zones on the one hand and the advanced hunter-gatherers to the east of the Delhi-Aravalli-Cambay line on the other. The full-fledged transition to agriculture among these hunter-gatherers was due to the impetus provided by the late Harappans on the move from the upper doab towards the Gangetic valley, and from Gujarat towards Malwa and Maharashtra. The catalytic factor behind this transition was the contact of the regional hunter-gatherers with the descendants of a highly developed Bronze Age civilization. The specific form this transition took in different areas no doubt calls for further research, but this is a hypothesis which makes the story of India's protohistoric development specifically Indian. This is also a hypothesis which gives the hunter-gatherers of the Indian peninsular block a decidedly positive role in the subcontinent's early history.

The question which confronts us in the end is why the early mesolithic communities of inner India, although familiar with the domestication of cattle, sheep and goat and the utilization of plants, if not with incipient cultivation, failed to expand the latier base of their economy before

interacting with the Harappans or perhaps before feeling the impact of the direct presence of the late Harappans in their midst. There can be no straightforward answer, but the point worth bearing in mind is that there was simply no pressure on these hunter-gatherers to change their way of life as long as there was no lack of procurable plant and animal food in the forests. Indian forests as a source of food are being anthropologically/ethnobotanically studied (cf. Nagar 1985), and D. D. Kosambi (in Allchin and Chakrabarti, eds 1979) gave some thought to it in the context of the Deccan plateau which is by no means 'so rich in vegetation as other parts of India'. Among the semi-wild and less regularly cultivated varieties alone, he could list twenty-six names, and as he puts it, 'in the better forested regions, many of these minor staples can be gathered wild. The list of edible forest products normally known to the local inhabitants goes to nearly 200 for the Konkan forests. This includes fruit, berries, leaves and mushrooms, but not wild game, honey and the like nor the coconut upon which the entire west coast economy depends'. Till recent years there was a marked dependence on wild plant resources in Indian villages and when the granaries are empty for the poor for two or three months in a year, it is the availability of plant food in the forests which keeps them going till the next crop. A hunting-gathering streak has always run strong through the fabric of Indian subsistence economy and perhaps in various ways through society. At one level the history of India has been the history of the incorporation of the once endemic hunting-gathering groups into the framework of a higher social and productive organization, the roots of which are traced on the basis of archaeological evidence to the Ghaggar-Hakra stretch.

THE EARLY HISTORY IN THE GANGETIC VALLEY:

THE IRON AGE

The issue here is not the beginning of the use of iron in India but the distribution and character of Iron Age settlements in different parts of the subcontinent. The data are limited outside the doab. The reason is that the early Iron Age sites are easily distinguishable because of the diagnostic pottery—the painted grey ware, which also occurs extensively further to the west, in the divide. The problem is that in the divide there is an iron-free level of this pottery, and one does not know, at the surface material, which painted grey ware site is iron-free and which is not. This problem has not yet arisen in the context of the rest of India, especially in the peninsular block and the

middle Gangetic valley, the major protohistoric column is that of black and-red ware, and it is not possible to determine on the basis of surface assemblages which site is chalcolithic and which one is iron-bearing. The associated wares should give some indication, but one does not suppose that the stratigraphic position of such wares is clearly understood. It will be quite logical at this stage to argue that as far as east India and central India are concerned there is nothing specific to argue that the number of sites during this period became more or that the sites became larger. As far as one can see it, it is the same assemblage of plain and painted black and-red and associated wares, microliths and some copper and iron. In south India the evidence is a trifle more complex. A number of neolithic megalith overlap levels in the south date the beginning of iron in that part of India sometime before 1000 BC but one does not know, without excavation, whether a particular iron-mixed assemblage is early or not. If one more or less ignores the chronological issue, an excellent study of the different locational aspects of south Indian megaliths (including the ones from Vidarbha) has been published by U S Moorti (1991). Out of 1933 reported megalithic sites (the number calculated by Moorti), only some are settlement sites, and out of these sites the size-category data have been cited for 54. While there is a regular hierarchy of settlements ranging from those which are less than 2 ha in extent to at least one in the 7-799 ha category, 'the position of these settlements in the hierarchy and their role in the regulatory and ritual network, at the moment is not clear'. However, it is pointed out that most of the larger settlements are located on 'the known major trade and communication routes of early historic India'. Secondly, Moorti's study shows that the megaliths are distributed in varied ecozones, some of which form agriculturally fertile areas. Thirdly, one should underline the fact that megalithic monuments 'which on account of their size and complexity, require planning and a labour force' were indeed an integrated part of this society which also shows positive traces of craft activities including metallurgical practices at a number (85) of sites. It has further been recorded that 'out of a total of 1896 burials considered for analysis, 92 burials have yielded weapons in varying quantities. From these 92 burials 285 weapons were recovered. Warfare appears to have increased during this period probably to control resource-rich zones if large aggregations of cemetery in some of these resource-rich zones (e.g. in Wainganga basin, Raichur region, middle Krishna valley, Kolar region and Coimbatore uplands) is any indication. On the whole Moorti postulates a ranked society during this period. But then, the problem is, 'which period'? Some of Moorti's 1900-odd mega-

lithic sites will no doubt date from 1000 BC but some will date from the early centuries AD too, herein lies the problem.

For the painted grey ware sites in the doab one may depend on M Lal (1984) and R C Gaar (1983). The number of such sites located by M Lal in the Kanpur district is forty, all of them located on the river banks with the exception of five which are located near low-lying areas. The general distribution of sites is clearly concentrated in the divide and the doab, and one may easily establish a two-tiered settlement hierarchy. The existence of regional centres is probable. Whether some centres like Bukhari in Haryana (9.6 ha) can be called urban centres or not is a different issue altogether. I do not propose to put the beginning of early historic cities at the 'divide' and the doab in the painted grey ware period, a comprehensive picture of which emerges from the relevant level at Atranjikheda: Wattle and daub huts, the cultivation of wheat, rice and barley, miscellaneous terracotta, stone and bone objects, a limited number of semi-precious stone beads, a few glass and shell objects, cattle and other animals including buffalo, and an extensive use of iron seem to give its basic economic and cultural picture.

Those who are willing to give iron technology in the doab more than its due share in the sustenance of agricultural development leading towards the formation of early historic cities in the succeeding NBPW or Northern Black Polished Ware period, beginning around c. 700 BC as at Srirangavallu in the central section of the Gangetic valley (for Srirangavallu see Lal 1992), forget that the village life and the crop patterns of the entire subcontinent were laid down in the earlier chalcolithic stage and that not a single major crop was added to the list after iron was introduced. I find no reason to argue that the use of iron had different 'modes', beginning with its use as nails, weapons, etc. and developing into agricultural implements. Nor do I find any reason to believe that the development of iron technology underwent two stages during this period with some significance for the socio-economic development, i.e. in the first stage only wrought iron was known and in the second stage steel was introduced. Given the firm rooted agricultural base all over the country, especially in the fertile alluvium of the Gangetic valley, the catalytic factor in the early historic urban growth in the region is more likely the formation of clear and powerful regional kingdoms which confront us at the first phase of our documented political history (Raychaudhuri 1953).

Early Historical Cities

Between c. 700 BC, the date of the advent of the NBPW at Srīngaverapura in the central section of the Gangetic valley, and c. AD 300, the point immediately preceding the Gupta age maturity, India witnessed the growth of urban centres in all her major geographical regions. Though a well established village economy always lay in the background, the urban centres themselves did not grow at the same time, nor were they the products of the same type of factors everywhere. Any survey intended on bringing out this regional pattern should be zonal in approach till it is possible to view the entire range of data within the subcontinental framework.

NORTHWEST

Lying between the Hindukush and the Salt Range and divided by the Indus, the submontane Indus region or the Northwest has a number of smaller physiographic subdivisions: the plains of Peshawar, Kohat and Bannu to the west of the Indus and the Potwar plateau to its east. A semi-circular lowland of about 2500 square miles and in height except along the Indus, the valley of Peshawar has only 10–15 inches of annual rainfall. It is only along the fans of the perennial streams like the Swat and the Kabul that the region is fertile and conducive to human settlement. The Kohat valley and the plain of Bannu to the southwest of the Peshawar valley enjoy a similar amount of rainfall and are generally noted for agricultural infertility. A general aridity also prevails over the Potwar plateau which often has a sandy or stony soil and an annual rainfall of about 15–25 inches.

This physiographic note, however brief, should suggest a simple but important point: agriculturally the submontane Indus region is not quite so productive. With the help of irrigation the soil could be made to yield a sustenance but it is unlikely that in the area agriculture could by itself be more than a poor thing. What this region lacks is a natural product which



Map 5: General distribution of sites mentioned in Chapter 5

however, been made up by another vitally important factor, i.e. its position at the mouth of one of India's most important openings to the west. The Khyber is famous, but besides the Khyber there were other important routes—the one which ran along the Kabul valley, for instance. The coming of the Achaemenids brought the whole area into the orbit of contemporary west Asia and made the entire system of passage markedly significant. The successive early stages are the coming of the Achaemenids and Alexander, the establishment of the Mauryan hegemony, the close contact of the Mauryas with the Hellenistic courts and the dominance of the Indo-Greeks till finally with the Scytho-Parthians and Kushans the entire area teemed with traffic to west and central Asia. Another important route branched off from around Taxila to Kashmir and thence to central Asia. In the submontane Indus region it is these trade routes which resulted in urban settlements.

Charsada

The early Indian sources (for a review, see Law 1950: 4) refer to modern Charsada as Puskalavati, while in the classical sources (Majumdar 1960: 7, 15, 215, 257, 303, 341) it is known as Peucelaotis and Proclais (Majumdar Sastri 1927: 115–17). The city is traditionally (Law 1950: 14) believed to have been founded by Puskara, the son of Bharata and the nephew of Rama, and hence is deemed to be very old. In the writings of the historians accompanying Alexander it is frequently alluded to casually rather than described in detail. It is only Arrian (Majumdar 1960: 7, 15) who says that the ruler of this city which revolted against Alexander was Astes and that after subjugation by Hephaestion it was put under a Macedonian garrison commanded by Philip. As a specific coin type bearing the city-goddess suggests (Rapson ed. 1962 reprint: 530, pl. VI, 10), the city was very important during the Indo-Greek period. Its importance is likely to have declined with the growth of Purusapura or modern Peshawar under the Kushans. But if the evidence of Periplus is to be believed, it still retained its share in the extra-Indian trade of this period—goods from the Kabul valley, Kashmir, sub-Hindukush area and those imported from Scythia were sent through Proclais to Barygaza or modern Broach on the Narmada (Majumdar 1960: 303–4).

Of the mounds which are spread over an area of 4 square miles, only two have revealed something by way of planning. At Bala Hisar, the highest mound at the site, Marshall (1902–3) could unearth little except an assortment of stupas and other buildings. The sequence in the 1956

excavation by Wheeler (1962) began in about the sixth century BC, the date of the Achaemenid annexation of the region. By 327 BC, the date of Hephaestion's seizure, the city was strengthened by a ditch and a mud rampart. The occupation also spread outside the enclosed area to the east, across a filled-up river bed. Within the rampart a mudbrick house with three constructional phases has been identified. The ditch was about 15 ft (4.57 m) wide and 10 ft (3.04 m) deep and on a rough estimate based on contours, might have enclosed not less than 15 acres (6.07 ha). The rampart was about 16 ft (4.8 m) broad. A series of postholes, each a foot in diameter and 1–1.5 in deep (25.4 mm–38.1 mm), indicated a former timbered postern and bridge. The passage through the rampart was about 6 ft (1.82 m) wide.

There is more extensive evidence of planning at the neighbouring mound of Shaikhhan about 3 furlongs (c. 600 m) to the north-northwest and between the arms of two rivulets, the Sambor and Zinde. Air-photography revealed a city in the negatives.

A series of parallel streets—no less than five can be identified—40 yards apart divided the site into blocks in which coherent house-plans can be isolated. One street interval, slightly larger (50 yards), included the precinct of a massive circular structure which can only have been a stupa or Buddhist (less probably Jain) shrine. The stupa stood on a slight rise and both by situation and plan dominated the scene. . . . It can be said that the whole site was laid out upon a regular grid and a dated rectangular plan with the temple in its midst (Wheeler 1962: 16, 17).

Dani's 1963–64 excavations (Dani, 1965: 66) have shown that the city was most probably founded by Menander, the famous Indo-Greek king, in about the middle of the second century BC and that its occupation continued up to the reign of the Kushan king, Vasudeva, at the close of the second century or the middle of the third century AD.

Dani's excavation area was limited and could unearth mostly the structures of the Kushan period. The civic plan laid down by the Indo-Greeks, however, continued unchanged. The excavations identified three parallel streets and a side street crossing at a right angle. The drains, culverts and access points of a wide street all belonged to the Kushan period. The houses of this period were of mudbrick while those of the earlier ones were of diaper-masonry. In a Kushan period room a fire place was 1.5 m square and placed in the middle just in the same position as seen in modern Pathan houses. A house of the same period belonged to a Buddhist teacher, Haradakha, identified from a record at Charsada. A potsherd, belonging to a relic casket, and consisted of a

central open courtyard with rooms on three sides, the fourth side being closed by a high dividing wall. In the courtyard of the house there was a bathing place connected by a stone-built drain with the street outside. The house underwent a number of constructions, towards the end of which a shrine with the figure of Buddha was installed.

To the west of the Indus Charsada happens to be the only well-known and excavated urban centre. Arrian (Majumdar 1960: 11) refers to a great city called Massaga in the territory of the Assaceni, a tribe which offered considerable resistance to Alexander. Though identifications have been suggested (Smith 1924: 57, n. 1), the archaeological potentiality of the site is completely unknown. As the literary sources, including Hiuen-Tsang (Watters 1961 reprint, vol. I: 201–14) and the stupa at Shirdheri (Spooner 1908–9) imply, the northern capital of the Kushans—Peshawar or Purusapura—must have been considerably important in the early centuries AD but its precise features have not been investigated archaeologically. In about the same period there was a considerable number of Buddhist settlements, stupas and monasteries, in the Swat valley—all possibly subsisting on the religious generosity of the princes and merchants made wealthy by the teeming west Asian and central Asian traffic. The wealth generated by the same traffic again is likely to have resulted in an increase in the number of urban centres in the area but of their number and character we know almost nothing.

Taxila

To the east of the Indus, Taxila or ancient Takṣaśila in the Potwar plateau was a trade centre par excellence, owing its importance to its position on the route converging upon Bactria in Afghanistan. A second route connected Taxila to central Asia by way of Kashmir. It may also be emphasized that Taxila gave easy access to the Indus system and thence to the Arabian Sea and thence alternatively to the Red Sea and the Persian Gulf.

The importance of Taxila has been reflected in all categories of Indian literature (Sukthankar 1914–15, Law 1954: 129–31)—Hindu, Buddhist and Jaina—and also in the writings of the Graeco-Roman Historians (Majumdar 1960: 113, 257, 276–371, 386–8, 393, 410, 442). According to the epics, Taxila was established by Takṣha at about the same time as Puskalavati and was conquered subsequently by King Janamejaya of Hastinapura who chose to perform his great snake sacrifice there. Taxila finds mention in the Buddhist sources, notably the *Jātakas* where it is

primarily known to be a centre of learning (Law 1922). It was also visited by the *Parivrajakas* of the Jains. In the Graeco-Roman testimony the ruling king of Taxila who submitted to Alexander was Taxiles. At Taxila Alexander received envoys from 'Abisaras, king of the mountaineer Indians', offered sacrifices and celebrated gymnastics and equestrian contests (Majumdar 1960: 23). Plutarch refers to some gymnosophists of the city (Majumdar 1960: 200–2). Strabo writes about some of its customs—the custom of auctioning poor girls of marriagable age, of throwing the dead to the vultures and of having more than one wife. He also refers to two Brahmin sophists with disciples, who used to spend some time in the market place and were 'authorized to take as a gift any merchandise they wished' (Majumdar 1960: 276–7).

Archaeologically Taxila is the most extensively excavated city site of the subcontinent. Lured both by its close Greek association and 'something appealingly Greek' (Marshall 1951: preface) in its countryside, Marshall excavated it between 1913 and 1934 while a season's work was aided by Wheeler in 1944–45. More recently, the Bhamburda was excavated by S. M. Shrivastava (1969).

Divided by the Marce hills and their spurs, one of which—the Hathial, actually divides it into two, the valley of Taxila is watered by the Haro and its tributaries, or, hardly more than mere hill rivulets. The northern part of the valley is now well watered both by streams and modern irrigation canals while the southern part is rocky and the least important except for the Buddhist stupas and monasteries on the knolls and slopes.

The three successive urban settlements of Taxila—Bhir, Sirkap and Sirsukh—grew in the western part of the northern valley within three and a half miles of one another, stretching the history of Taxila from the sixth century BC to the third century AD, from the Achaemenids to the Kushans. Of these the first two, Bhir and Sirkap, have been extensively excavated while the third, chronologically the last one, Sirsukh, has been merely touched upon.

The Bhir mound

The earliest of the three cities in Taxila lies concealed under what is known as the Bhir mound, of which a more or less connected plan has been excavated over about three acres in the middle. There are four occupational phases in the mound, the first six centuries BC (Stratum IV) to the second century BC (Stratum I) and later. The character of the rubble masonry of the first phase, known by the local name of a soft variety of loam ore is not

neat and compact in Stratum II showing a gradual degradation up to Stratum IV. There was a thick internal and external coating of both plain and white washed mud plaster on the walls of all the strata. The excavated remains are mostly on Stratum II, dated third century BC. So the civic plan of the Bhir mound belongs essentially to the Maurya period.

On plan Mauryan Taxila looks irregular and haphazard. Four streets and five lanes with associated house blocks are clear. With an average width of 22 ft (6.70 m) the First Street, the most important one at the site and dating from its earliest phase, does not run straight but has a distinct northwest-southeast slant. The other streets which vary in width from 9 ft to 17 ft (less than 3 to a little more than 5 m) are more winding with open square spaces along the way. The Second Street in the eastern part of the excavated sector, for instance, has a semi-circular bend in the north, while the Third and Fourth Streets also are equally irregular in alignment. The lanes, though considerably narrower, seem to have a more regular alignment, like Lane I between the Second and First Streets, which is almost straight. According to Marshall 'the lanes giving off the main street rose steeply towards the east and west' (Marshall 1951, I: 91), a normal feature in a settlement where its level was seldom interfered with but that of the lanes and adjacent houses rose with successive buildings.

In Fourth Street and Lane I there are traces of covered surface drains but they do not seem to be connected with any larger drain in the main street. 'The probability seems to be that so far as the main streets are concerned they had to serve as water courses during the rainy seasons' (Marshall 1951, I: 91).

Despite its irregular streets, narrow lanes and an unsystematic drainage system, Mauryan Taxila was not without some element of civic planning. One notices on the plan round refuse bins set in the open squares and streets and from one of them (in Square S, measuring 9 by 5 ft/2.74 by 1.52 m) came 'bones, broken pottery and such like refuse' (Marshall 1951, I: 91). Marshall suggests that they were regularly cleaned by the town sweepers. There were also rough stone pillars, about 3 ft high (0.91 m) above the ground, acting as wheel-guards, i.e. preventing the corners of the houses from damage by passing carts or chariots.

The houses usually comprised open courtyards surrounded by rooms. The average ground area of a house in the excavated sector which may be taken to be the well-to-do area of the city was about 3600 sq ft (334.45 sq m) of which 700 sq ft (65.1 sq m) were taken up by the courtyard. On the ground floor the rooms numbered some 15 to 20 and were not more than 150 sq ft (13.95 sq m) each, often much less. Some

of the ground-floor rooms facing the street might also be shops. 'Room 7 in block D overlooking Second Street was evidently a shell-worker's shop as many pieces of cut shell and mother of pearl were found in it' (Marshall 1951, I: 92). The open courtyards, sometimes two in number in the larger houses, were usually paved with stone. The bathrooms, open passages, etc. were also similarly paved. No traces of any window survive but they may have been placed high up in the walls. For the household sewage there were soakwells, a feature peculiar to the Bhir mound alone in Taxila. To carry off the waste water from the houses there were surface drains built of stone. Smaller drain-pipes were, however, of earthenware and provided with spigot and faucet joints. The general appearance of the houses in elevation is uncertain but 'probably they were very much like the houses of modern towns in the Northwest, with their mud-plastered walls, wooden balconies and flat roofs rising to unequal heights' (Marshall 1951, I: 93).

Marshall (1951, I: 98) thinks that one of the excavated houses possesses a religious character. It covers an overall area of about 180 by 70 ft (c. 60 by 23 m) and is divided into two blocks, a larger one to the north and a smaller one to the south. There is a narrow lane with an open square at its western end between these blocks. The northern block possesses two open courtyards, some thirty rooms and a large pillared hall. The religious character of the pillared hall is suggested by the occurrence in the debris of the building as well as among the ruins on the farther side of the lane of a large number of terracotta reliefs representing a male and female deity standing side by side and holding hands, which were possibly made to be sold to the worshippers.

II. Sirkap

In the beginning of the second century BC a new city was laid out in the valley of Taxila, somewhat to the northeast of the Bhir mound. The local name of the site is Sirkap. Unlike the earlier city the new one is characterized by grid-planning, the plan laid out on a chess-board pattern. The site of Sirkap offered certain natural advantages. It could include in the plan a portion of the Hathial ridge and thus could not only have the advantage of the low defensive hill but also an isolated knoll, the last part of the Hathial suitable for an acropolis. Besides the level space in the north, the Indus would provide a town-planner with a suitable opportunity for defence. The Tamra Nala skirting its western side could also be an effective source of water for the new city.

According to Marshall (1951, I: 118) there are seven occupational strata in Sirkap spanning three or four centuries of occupation. The earliest (Stratum VII) is pre-Indo-Greek, the sixth and fifth date from the Indo-Greek period and the rest belong to the Saka and Parthian domination. The excavated remains of Sirkap are mostly of the second stratum and thus of the Saka-Parthian period.

A new precision was brought to the history of Sirkap by Wheeler's excavations in 1944-45. To the north of the Saka-Parthian Sirkap there are remnants of a mud rampart of the Indo-Greek period, locally known as the Kachcha Kot. Marshall (1951, I: 117) believed that during the Saka-Parthian period when a stone (rubble set in mud) fortification wall was built the perimeter of the city was contracted leaving out the Kachcha Kot area. The 1944-45 excavations have shown that the rebuilding of the Saka-Parthian period did not imply any contraction of the periphery of the Indo-Greek city which included in the north the area of Kachcha Kot, but suggested the shifting of its centre to the south to include for the first time the spurs of the Hathial.

There are thus two successive Sirkaps, essentially distinct from each other: (i) an Indo-Greek city of the second century BC situated entirely on the river plain and fortified with mud (brick?) defences of which the Kachcha Kot is a fragment; and (ii) a Saka or early Parthian city of the first century BC, centred further south in order to comprise the impending ridges of Hathial (Wheeler in A. Ghosh 1948: 84).

Among the modern archaeologists I. R. A. Khan (personal discussion) believes that Kachcha Kot is a undated earthen embankment without any archaeological significance.

The periphery of the Saka-Parthian Sirkap was more than 3 miles (4.827 km) long, the entire length being protected by a stone wall. This did not form any rectangle or parallelogram but followed closely the line of the land. Except in the north and east the wall was never straight. Its thickness varied between 15 ft (4.57 m) and 21 ft 6 ins (6.55 m) and its height might have been between 20 and 30 ft (6.09-9.14 m). On the northern side it was strengthened by a raised beam, about 25 ft (7.62 m) wide and it had a series of rectangular bastions, possibly more than one storeyed, set at regular intervals along its face. The curtain wall between the bastions also had a beam on the inside for use by defenders and was loopholed above.

Of the gateways only the northern one has been excavated. In all probability there were gateways on the other three sides also. The northern

gateway was set slightly to the east of the main street. Marshall (1951, I: 114) suggests two reasons for this particular arrangement: no invader could rush the gateway and the street at the same time and secondly, the invader coming down the street would meet the city wall before reaching the gateway. The gateway, a large hall (62 by 14 and 10.5 m by 10.66 m, inside measurements), projected about 20 ft (6.09 m) on both sides of the wall. The outer projection was of a more solid construction, possibly a later addition. The four guardrooms were set against the outer face of the wall. There were two wells here, probably meant for both sentries and wayfarers. The solidity of the construction of the gateway suggests that it had at least one upper storey.

Another defence separated the acropolis on the Hathial spur from the lower city. Marshall (1951, I: 117) could only suppose its existence but the 1944-45 excavations identified 'the actual remains of the western part of the cross wall. At one point it is based upon a stone-revetted glieris and at another on a high stepped foundation' (A. Ghosh 1948: 43).

The excavated portions of Sirkap are limited to a broad strip, which begins at the northern wall and continues along the main street for about 200 ft (60.96 m). Besides, some work was carried out at a site called Maral and two stupas (Kunala and G stupas), all within the fortification but outside the Hathial.

Little is known about Sirkap earlier than the Saka-Parthian period. Those blocks 1', a', b' and c' in the Indo-Greek level were excavated, the excavated structures are not of interest. It has, however, been established that the alignment of the outer walls of the houses remained unchanged throughout. The rubble masonry of the sixth stratum (the first Indo-Greek phase) was coarser than that of the fifth stratum (the second Indo-Greek phase) and Marshall infers on this basis that 'in the building of the sixth stratum Sirkap the Greeks were compelled to work in a hurry, either at the start or more later, when they were well settled in Taxila, and were busy on other efforts' (Marshall, 1951, I: 123). A few Indo-Greek coins were excavated in the 1944-45 excavations also.

The Saka-Parthian Sirkap is a complete specimen of grid planning. The streets were laid out in a regular, mostly straight, fashion. The streets which branch off from the main street are mostly straight. Twelfth Street, however, has a slight curve. The blocks of houses between them are mostly clusters of one or two storeys, but a few small stupas (at the stupa between the Second and Third Streets) and at least two temples (an apsidal temple between the Fifth and Sixth Streets and the shrine of the double-headed deity in Block 1 between the First and Second Streets).

Except for a few houses under the city wall which are poor and shoddy, the houses in this part of Sirkap are commodious, with, on an average, 15000 sq. ft (1395 sq. m) of ground each. They represent in all probability, the wealthier part of the city, an inference which may be supported by the magnificence of some of the antiquities found here—boards of jewelry, silver ware, etc. The house-pattern centred around a courtyard or more than one courtyard with rooms on all sides. A particularly big house is the one marked IG on the plan, which with its four courts and more than thirty rooms on the ground floor covers an area of 24000 sq. ft (2232 sq. m). The rooms opening on the main street might have served in most cases as shops. Built of rubble-masonry the house-walls were mud plastered both inside and outside. Occasionally colour was applied to the plaster.

A structural complex in the southeastern extremity of the excavated part has been called a palace by Marshall (1951, I: 171-6). Its overall area was 250 by 418 ft (106.68 by 127.40 m) and besides the main street to the west it was surrounded by the Twelfth and Thirteenth Streets. Of its three entrances one is from the main street while the two others are from Thirteenth Street. The entrance from the main street led to a court with a raised hall on its southern side, supposed to be the 'court of Private Audience' with an adjunct, something like the Mughal *Diwan-i-khas*. The entrances from Thirteenth Street led to two other courts, the 'court of the guard' and the 'court of public audience'. From the 'court of public audience' one could go through a door in the north to a few rooms supposedly meant for state-guests while further north lay the 'zenana' or ladies' quarters where a small stupa and a few votive terracotta tanks were meant for the religious rites of the ladies.

It may be emphasized that Marshall's description of this structural complex as a palace rests on three grounds: (1) its similarity with the Khorsabad palace of Sargon ('there is the same great court surrounded by chambers and on one side of it the same court of retainers; on the other the apartments of the zenana. Here also, the other half of the palace is occupied just as it is at Taxila by reception and public rooms'—cf. Marshall 1951, I: 176); (2) its size, far more massive than that of the private houses; and (3) the comment of Philostratus based on Appollonius that there was no great display of buildings in the palace of Taxila and that if the men's quarters, the portico and the court were all of a modest, suburban character.

A high ground in the rocky ridges at the extreme western end of the Hathial spur, locally known as the 'mahal' (signifying royal residence), has revealed a complex of buildings which covers an area of 311 sq.

240 ft (94.48 by 73.15 m). The basic unit consists of a number of open courts which measure between 50 and 60 ft (15.24 and 18.28 m) each way, and the principal rooms around them compare favourably with those in the 'palace'. Its regulated planning is also noteworthy and in marked contrast with the rest of the houses in the lower city. Constructed earlier, the excavated remains of this complex belong to the first century AD (Marshall 1951, I, Chapter 7).

III. Sirsukh

In the closing years of the first century AD the Kushans laid out a new city at the site of Sirsukh, about a mile north-northeast of Sirkap across the rivulet of Lund. What we know about Sirsukh is confined essentially to its fortification wall and a limited area inside. An interesting but unexplored feature of Sirsukh may be the chain of mounds to its north-west.

Somewhat like an irregular rectangle on plan, the Kushan Sirsukh measures some 1500 yards (1371.6 m) along its northern and southern sides and 1100 yards (1005.84 m) along its northern and western sides. An idea of the fortification wall comes from the exposure made near its southeastern corner. It was constructed of rough rubble-faced masonry of the heavy diaper type. In the outer face it had an added row of panth for the strengthening of the foundation and the prevention of undermining. There were bastions, semi-circular in plan, at regular intervals.

Inside the fortification wall the excavations near what is known on the plan as the Pindara mounds have revealed two open courts with attached buildings, apparently part of a big building.

Kashmir

Although it is still not easy to determine when the valley of Kashmir was essentially a mountain girt narrow strip about 84 miles long and 15 miles wide, it has gained historical importance. Both at Buzahom and at Gokula, the level is followed by a masonry building megastyle with which Gokula has been dated from 1500 to 1100 B.C. Three identifiable iron artifacts (2 needles, 1 nail), wheelmade dull red pottery with shapes such as 'cup with shapeless rim', long-necked jars, bowls, and a small star-shaped medium-sized globular jar and channel-spouted jar. The remains of rice and millet have been found in this level.

(A.K. Sharma 1991). The diagnostic early historic pottery—the NBPW—appears in Period II at Semthan in the Anantanag district, its Period I yielding both burnished and plain grey wares, and specimens of wheat rice and barley. This seems to conform to the megalithic level at Gufkra.

There is no doubt about the wide distribution of early historical sites in Kashmir (cf. IAR 1981–82 16–19, 1983–84 35, 1984–85 23–4, 1985–86 34–7, 1987–88 31–2).

The literary sources refer to very early historical beginnings. The classical sources refer to a place designated variously as Kaspapyros, Kaspatyros and Kaspēira, supposedly an ancient city in Kashmir. According to the *Rajatarangini*, Asoka built a city in the valley and in this he was followed by three Kushan kings—Hushka, Jushka and Kanishka—each the founder of a city after his own name—Hushkapura, Jushkapura and Kanishkapura. Attempts have been made to identify these places but there has been no systematic archaeological investigation at any of the proposed sites (see S.C. Ray 1957: 3–10, Chakrabarti 1984). At this point it may be emphasized that the basic geographical importance of Kashmir in the history of India is that it gives access to central Asia through its northern territories of Gilgit and Hunza on the one hand and to Tibet and thus to China through Ladakh on the other. These routes, particularly the one leading to central Asia, became markedly significant under the Kushans in the early centuries AD and it is probable that a systematic growth of urban settlement in Kashmir may be linked to this factor. However, more clear archaeological investigations are needed.

PANJAB PLAINS

The Panjab plains proper lie between the Salt range and the Sutlej. One still is not quite sure when the early historic period began in this area but an investigation of the route of Alexander's campaign and the associated places should provide a convenient starting point. Cunningham (1963 rep. 130–209) located a number of settlements but his work has not been followed up by excavations except at one place—Tulamba in the valley of the Ravi (Maghal 1967). Tulamba covers a big mound—1630 by 1220 ft or c. 530 by 400 m—with the traces of a citadel, and according to the excavator, the site may be identified with one of the cities of the Mallans taken not by Alexander himself but by one of his generals. Perithon's (Maghal 1967: 22). The limited excavated area has, however, belied the assumption of Cunningham (1963 rep. 189) that the citadel of Tulamba was encircled by a moat during the time of Alexander.

One particular site in the Panjab plains deserves close attention, although no proper archaeological investigation seems to have taken place here. Sakala Sagala, the capital of the Indo-Greek king, Menander, has been described as a rich and prosperous city laid out on the typical chess board pattern in a contemporary text—the *Milindapanha*. In the *Mudrarakshasa* this was the capital of Madras, which corresponds to the modern district of Sialkot 'between the Chenab and the Ravi or between the Jhelum and the Ravi' (B.C. Law, 1969). Cunningham confused between Sangla in Alexander's campaign to the west of the Ravi and Sakala lying to its east. He placed the site at Sanganwala Tibba in the Jhang district whereas Sakala is now identified with modern Sialkot. The literary sources further indicate that Sakala was an important early historical trade centre with connections with the West and the Gangetic valley. For this aspect, see H.P. Chakrabarti (1966).

S.M. Ali (1966: 145) has pointed out that 'before the irrigation canals came into existence, the population distribution in the (Panjab) doabs was always concentrated in the northern belt of the doab, i.e. the piedmont zone of the mountains'.

SIND

The early historical archaeology of Sind also remains largely an unknown territory. Although the term Sindhu, the ancient name for the modern province of Sind, occurs quite early in Indian literature (Law 1954: 127). The chronology of the classical references is more or less precisely fixed. In 520 B.C. there was a Persian-inspired voyage under Scylax to explore the course of the Indus beginning from the region of modern Attock. In 326 B.C. Alexander, while sailing down the Indus, encountered a number of independent Sind tribes and there is a specific reference to the kingdom of Massagetae whose capital, according to Vincent Smith (1924: 94–101), may be located at Aror or Aror in the Sukkar district. Alexander's successors did not fortify a port called Patara in the delta from where Nearcticen sailed on the east bound journey to the mouth of the Euphrates. The place has been suggested as a possible identification with Bahmanabad, the place has not been precisely located, nor is there any proof of a settlement of any considerable size except perhaps Brahminabad (Bahmanabad) in the delta region. There is lack of archaeological proof to suggest that in the 3rd century B.C. the merchants from the Indus delta were travelling as far as the west end of Sakotra and that Sind during this period was referred to as the 'rich country' in a Chinese source.

(B N Mukherjee 1970) Sind became undoubtedly significant in the early centuries AD and when it came within the Kushan empire and was an important geographical territory catering to the Indo-Roman trade. Archaeologically even this fact remains largely uncorroborated though 'the many Buddhist stupas which were built in Sind in the early years of the Christian era' (Cousens 1929: 168) point to its increased importance. There have been some investigations at the site of Bahmanabad (Cousens 1929: 52, *Pakistan Archaeology*, 1, 1964: 49-55) which, although the site of the Arab capital of Sind, Mansurah, seems to have had considerably early beginnings. One detects unmistakable early historic terracotta ringwells and beads 'below the Muhammedan strata' in Cousens' report on this site (for a survey of the 'Buddhist period' in Sind on the basis of the Islamic sources, see Warwick Ball 1989).

INDO-GANGETIC DIVIDE

The Indo-Gangetic divide, the divide between the two great river systems of India, lies between the Sutlej and the Yamuna and has as its other limits the Siwaliks on the north, the dried-up course of the Ghaggar in the Rajasthan desert in the south and the Aravalli ridge reaching upto Delhi in the southeast.

O.H.K. Spate (1957: 534) who emphasizes the significance of this area as a physiographical unit calls it a transitional area both physically and culturally.

Commercially and culturally it is the great marchland between Islam and Hindustan. Muslim culture today finds its highest expression in Lahore, while on the other side of the region Multan is rich in Hindu tradition; between them Delhi is (or was until recently) a Muslim outpost, yet with deep roots in the remoter Hindu Past.

This analysis based on later day Indian history seems to find a significant correspondence with the earlier archaeological aspects of the region. The early archaeological stages are the Sarasvati and Indus-based Harappans who spread over the entire area from Rupar at the foot of the Siwaliks to the sites on the Ghaggar-Hakra; the ochre-coloured pottery which occurs both in the divide and the upper Gangetic valley; the painted grey ware which possesses a similar distribution, and finally the northern black polished ware or the NBPW which heralds the beginning of the historic period in a broad sweep from the lower Gangetic valley to the divide. From then on to AD 300, the entire area was a fermenting pot of both Indian and extra Indian impulses: the growth of the tribal

tribes of the Yaudheyas and others, and the advent of the Indo-Greeks, Parthians, Scythians and Kushans, all archaeologically reflected in the combination of their coins and other traits. The Indo-Gangetic divide is, in fact, an indisputable area of cultural transition where influences both from inner India and the west mingled together.

There is no lack of early historical sites in this area (for a general survey, see Y.D. Sharma 1964: 48-9) of which only a few can be mentioned here.

Agroha

At the foot of the Siwaliks, Rupar III, dated c. 600-200 BC, yields NBPW, punch marked and unincised cast copper coins, an inscribed seal in Mauryan Brahmi and other small finds, placing the level on par with the early historic period of the Gangetic valley.

Kalki stone or river-pebbles set in mud-mortar were used for buildings in this period. Though houses of mud and kiln-burnt bricks were by no means rare. A 12 ft. x 12 ft. burnt-brick wall, traced to a length of about 250 ft, proceeds in a curve at the exposed ends and in all likelihood enclosed a tank, since an inlet through the wall was possibly used to feed the reservoir with rain-water. The upper levels of the occupation are characterized by soak-wells lined with terracotta rings (Y.D. Sharma 1964: 48-9).

The next period, marked by a few structural levels of which little has been published, carries the occupation of the site to about AD 600.

Sugh, Agroha, Sanghol, Thaneswar and Rangmahal

Excavations at Sugh (IAR 1963-64: 27-8, 1965-66: 35-6) have revealed little except a broad stratigraphy beginning with the PGW level but the place has been identified with ancient Sughna mentioned, among others, by Hiuen-Tsang (Law 1954: 12-9). The site, according to Cunningham (1963 rep.: 291) is a natural stronghold; it showed evidence of a fortification on the surface and had a circuit of about 4 miles. Sunet (IAR 1962-64: 67-70) or ancient Sunetra in the Ludhiana district, Panjab, shows a sequence beginning with the late Harappans, but the primary evidence is from its Period IV (200 BC-AD 300) which revealed the houseplan: the main entrance on the northeast, an open courtyard in the middle, traces of stairs, two rooms at the back, a room for cooking, a room with a small water tank (bathroom) and a room for grains. Built of burnt brick, this house was flanked on

three sides by mud huts which have been reported to be servants' quarters. It had an elaborate drainage system and there was a small platform (2.5 by 1.45 m) in front of the main entrance to the house which is supposed to date from the Kushan/late Kushan period. Another interesting aspect of the site is the discovery of a hoard of 30,000 Yaudheya coins, gold and a large number of seals and sealings. Agroha in the Hissar district of Haryana has been excavated for a number of seasons (JAR 1978-79: 68-9, 1979-80: 31, 1980-81: 15-16) showing a sequence back to the NBPW, but little else besides some brick structures of the late Kushan/Gupta period. Sanghol in the Ludhiana district has been excavated since 1968-69 (JAR 1968-69: 25-6, 1969-70: 31-1, 1970-71: 30-1, 1971-72: 39-41, 1977-78: 43-4, 1980-81: 46, 1984-85: 62-4), but apart from its late Harappan antecedence the most important feature of the site is the discovery of 117 Mathura sculptural pieces in the context of a spoked and circular stupa of the early centuries AD.

The excavations conducted at modern Phaneshwar near Kurukshetra in Haryana covered principally the mound of Harsika Til which although about 75 ha in extent forms only a section of the overall area of ancient occupation (for both literary and archaeological references see Pande 1990). The report is available for the first season of work (JAR 1987-88: 28-30). Traces of a seventh century AD 'palace' have been said to be obtained. Another related site is Kuruksha Qila (JAR 1970-71: 15-16) where the NBPW period (Period I) showed both burnt and mud brick structures. There were in all seven structural phases in the early Christian era (Period II). One season's excavation at Rangmahal (RPF 1959) yielded little by way of planning but that the site was important has been demonstrated by a fine collection of terracottas, mostly of the Gupta period, found during excavations.

THE U.P. HIMALAYAN AND SUB-HIMALAYAN BELT

The work by Garhwal University students under K.P. Nautiyal has primarily been instrumental in the discovery of a large number of sites in this region, including apparently protohistoric burials at an altitude of 4000 m near Joshi Math. In addition, the discovery of PGW or PAV related sites such as Thapli and Jainal-Naula deserve attention. A 12th century AD stupa site has been excavated at Moradhvaj in the Bijnor district (JAR 1982-83: 94-5). Another temple site was excavated by N.C. Ghosh at Virbhadrar near Rishikesh (JAR 1973-74: 28-30, 1974-75: 3-7). Kausapuri in the Nainital district has a sequence going back to the NBPW

period. A structure (24 by 18 m) made of burnt bricks and 'laid in the east-west direction in the shape of a flying Garuda, the head being exactly towards the east and the tail towards the west' (Nautiyal and Khanduri 1970) has been identified as a Vedic brick altar of the second century BC-first century AD at Purola in the Uttarkashi district. No large settlement site has yet been reported from anywhere in the area.

THE GANGETIC VALLEY

The downward limit of the upper Gangetic valley has been suggested by Spate (1957: 546) to be a line running roughly from the Ganges-Yamuna confluence at Allahabad across the north-northwest-south-southeast section of the Chaghra. In terms of modern political units this conforms broadly to the western two-thirds of Uttar Pradesh excluding the montane districts of the north and the districts of Jhansi, Banda and Hamirpur lying on the peninsular foreland. As in the Indo-Gangetic divide, there is no dearth of early historical sites associated with the NBPW in this area. But only a few of them have been properly excavated and have yielded any coordinated data regarding urban growth and town planning. Besides, some sites with an unmistakable urban significance in contemporary literary records have not been excavated at all.

Hastinapur

Hastinapur (ancient name Hastinapura), identified with a place of the same name in the Mawana tehsil of Meerat, now five miles away from the Ganges to the west, had distinct epic, Puranic and Jaina associations. It was the Kuru capital in the Mahabharata till a river-flood led to the transfer of the capital downstream to the ancient city of Kausambi. In the literature it was the dwelling place of Risabha, the first Jaina tirthankara (also a place which was often visited by Mahavira, the founder of Jainism (Law 1954: 81). The site was excavated by Lal (B.B. Lal 1955: 52). He points out that the settlement developed lengthwise along the river and that the original width is impossible to determine. The two main mounds which one now observes at the site formed originally a single mound. The early historical (600-200 BC) and Period IV has been dated to the second century BC and the late third century AD. The site was not fortifical but whatever evidence there is suggests a settlement of planning. In Period III burnt bricks of three different

sizes) came to be in general use for the construction of houses, though mud and mudbricks were also occasionally used. In one cutting there were three structural levels while in another there were six. A burnt brick wall was partially traced for 28 ft and the size of one room was found to be 15 ft (4.15 m) square. Among the burnt brick drains an excavated specimen was 3 ft (0.91 m) deep, possessed a brick-floor and lining and was traced for 24 ft (c. 7.5 m). These were perhaps general civic drains while in the case of individual houses several vertically placed long jars with perforations at the bottom generally served as soakage pits. The excavated terracotta ring wells were of two types—some were shallow with only a few rings while those of the second type went much deeper. The first type possibly denoted a soakage pit whereas the second type denoted a well in the real sense of the term. The occupational phase of Period III came to an end due to a large-scale fire which is evident from burnt-out remains all over the excavated area. In Period IV there were seven structural sub-periods. Houses were invariably of burnt bricks and squarish bricks were used for the flooring. There is also evidence of regular house planning with orientations roughly along the cardinal directions.

Indraprastha

Indraprastha in the Purana Qila area of modern Delhi was the Pandava capital in the Mahabharata, also alluded to in other sources (N.I. Dey 1971 rep.: 77–8). Archaeologically, very little is known of the site, though a small excavation in 1954–55 (IAR 1954–55: 13–14) established a cultural succession from the PGW phase to the Kushan period and later. Burnt brick houses and terracotta ring-wells were noted in the early historic period. The subsequent excavations (cf. IAR 1969–70: 4–6, 1970–71: 8–11) did not yield much except the remains of what may be a Gupta temple. A Saka-Kushan house measured 1.80 m square with a 0.75 m wide doorway. The earlier structures went back to the Maurya period.

Atranjikkhera

This large (c. 46 ha.) site on the right bank of the Kali Nadi, a tributary of the Ganges, has not yet been satisfactorily identified with any ancient site mentioned in literature, although its excavator, R.C. Gaur (1983) seems to prefer its identification with Vairanja/Veranja of early Br

hmin literature (for a differing view point, see A. Ghosh 1989). References have been made to the existence of a mud defence wall, a granary and an apsidal temple in the NBPW phase. Gaur (1983: 254) writes that the settlement seems to have grown into a full-fledged town during this period.

Mathura

Literary references to Mathura are copious and of all kinds—Brahmanical, Buddhist, Jaina and classical. In the Mahabharata and the Puranas Mathura has been associated with the Yadava clan, itself divided into a number of septs like the Andhakas and the Vrishnis who later on migrated to Dwaraka in western India. The *Milindapanha* refers to Mathura as one of the chief cities of India. The numerous inscriptions and *avagatras* recovered from the Kankali tila at Mathura testify to the fact that Mathura was an important centre of Jainism from about 200 BC onwards. The Jaina inscriptions are also significant because they refer to various local persons and their professions—caravan leader, performer, banker, metal worker, treasurer, etc. Mathura was also a noted centre of the Bhagavata and the Naga cults. Among the earlier authors, Patanjali, Panini and Kautilya refer to Mathura. Kautilya refers to its cotton industry while Patanjali speaks of its kettle drums, garments and karsapanas. Traditionally known as the centre of Surasena country, Mathura also finds reference in Megasthenes as Methora in the country of the Surasenois. As Mathura it has also been mentioned by Pliny and Ptolemy (for the literary and epigraphic references to Mathura, Law 1954: 106–10, Dey 1971 rep.: 127–8, H.P. Chakrabarti 1966: 169–73, D.M. Srinivasan 1983).

These literary sources amply testify to the fact that Mathura was both a religious centre and an important entrepot of trade and commerce. The commercial significance obviously sprang from the fact that it lay at the junction of two important Indian trade-routes: the one which travelled from the Gangetic valley to the northwest and the other branching off to the northwest from Mathura itself. On the political level Mathura was the southern capital of the Kushans. This inclusion in a political unit which had its epicentre in the northwest and extension up to the west coast must have made Mathura one of the most important commercial centres of the north. Despite intermittent explorations spread over more than a century, the primary aim at recovering antiquities, Mathura remains among the least explored, yet excavated important early historical sites of India.

one of the reasons being the location of the modern built-up area over much of the ancient settlement.

A co-ordinated picture of the lay-out of the ancient settlement is not yet to come by. In 1862 Cunningham (1966 rep.: 13-46, pl. I) recorded nine separate mounds among which he gave some prominence to the Katra and Kankali tila because of their wealth of stone sculptural and architectural pieces and inscriptions. None of the subsequent explorations and excavations aimed at giving a comprehensive idea of the site as a whole. H. H. Stuart Piggott in the early forties (whose fieldwork results have been incorporated in his brief essay on Mathura, Piggott 1945) detected the alignment of a mudbrick fortification wall and also discovered PGW and NBPW from the exposed sections. Evidence of the fortification was also confirmed by subsequent explorations during which a limited area in the Katra mound was also excavated. An exploratory survey 'revealed the existence of two rings of mud-ramparts, the first elliptical in shape and the second quadrangular and comprised within the first, as if signifying a citadel' (IAR 1954-55: 15). M. C. Joshi's excavations at various spots at the site (IAR 1973-74: 31-2, 1974-75: 48-50, 1975-76: 53-5, 1976-77: 54-6) have led to a better understanding of the urban plan of ancient Mathura (M. C. Joshi 1983). Beginning as a small PGW settlement, Mathura became an extensive urban settlement (c. 360 ha. or more) fortified by a massive mud wall forming a long slender crescent on plan with the Yamuna in the east. Except on the river side, there could be a moat on three of the other sides where regular silt deposits occur immediately outside the fortifications. Within this period, houses normally associated with ring wells, were built on compact mud platforms, probably in clusters, and roofs were supported by mud walls and bamboo or wooden posts. The use of baked bricks was confined to a few structures. In one case large sized bricks were used as veneering material on the face of a mud platform serving as a base of a house (M. C. Joshi 1983). The mud fortification apparently fell into disuse during the next period but there was an increased use of burnt bricks as housing material (the late centuries BC). The next phase continued up to c. AD 300.

A significant structural development of this period was the revaluation and reinforcement of the mud fortification around the city. In addition, an inner fortification with possibly semi-circular bastions and a moat on at least the western and northwestern side was also built. Its remains were located in the northern part of the Katra mound. Built of mud, it was externally strengthened by a sloping retaining wall of broken and overburnt bricks, tiles, clay lumps, etc. and originally had a considerable height. ... It can be guessed that the inner

fortification had roughly a quadrangular shape around the central part of the city (M. C. Joshi 1983).

The mound of Sonkh in the neighbourhood of Mathura (IAR 1966-67: 41-3, 1968-69: 40, 1969-70: 42-3, 1970-71: 39-40, 1971-72: 47-8, 1972-73: 33-5) has hardly revealed anything of structural importance except a Kushan period apsidal complex.

Kampilya

Mentioned in both the epics, the Ramayana and the Mahabharata, Kampilya was the capital of South Panchala. Panchala territory corresponds roughly to modern Rohilkhand with the Ganges dividing it into two parts—the northern and southern. There is a reference to it in Panini also (Law 1954: 91-3). Balaram Srivastava (1968: 59-60) points out that Kampilya lay on a route mentioned in the *Satapatha Brahmana*. The place has been identified with the site of modern Kampil, 28 miles south-east of Fatehgarh in the district of Farrukhabad (N. L. Dey 1971 rep.: 88). But excavations (IAR 1975-76: 51-2) have taken the antiquity of the site back to the PGW period.

Sankisa

Modern Sankisa, about 23 miles west of Farrukhabad in U. P., is called Sankasa in the epics and is referred to as the capital of Kausika, the brother of Dhritrashtra, the father of Yudhishthira. According to the Ramayana it was on the Ikshumati and was surrounded by ramparts. In the Mahabharata it has been referred to as Sankasa. The literary sources leave little doubt that it was an important site (Law 1954: 120; N. L. Dey 1971 rep.: 89). While exploring the ruins at Sankisa, Cunningham (1963 rep.: 31) reported it to be more than three and a half miles in circuit. A detailed study of the ruins suggests that the gates were on the north, east and west sides. In 1927 H. R. Sankar and in 1929 H. R. Sankar and J. H. Sankar classified the ruins into Blocks A, B, C and D. Among these the Block A is the earliest of which has been archaeologically dated to c. 200 BC.

Kanauj

Kanauj is situated about 15 miles away from modern Kanpur. It was an important site in the post-Gupta period when it was the capital of the Kanauj rulers. But both the epics refer to Kanauj and there is also a

reference in the Buddhist *Vinayapitaka* (Law 1954: 9–4). Brief excavations (IAR 1955–56: 19–20) unearthed PGW at the site.

Chakranagar

This site in the Etahwa district of U.P. has been identified as the city of Ekachakra mentioned in the Mahabharata. The finds of a copper coin of Menander and other early historic inscribed material throw some light on the antiquity of this unexcavated place. D.R. Sahni (ann. rep. A.S.I. 1923: 24: 59–60) writes:

The ruins consist of a vast *khera* about three miles in circuit and visible from a long way off. In all probability the site was originally occupied by a walled city surrounded by a ditch on three sides, the fourth side being protected by the Jamna river. No portions of the old enclosure walls are now visible anywhere though their position is clearly marked in some places by continuous lines of ruins strewn with brickbats and potsherds. The inner citadel is divided into two portions by a ravine running down to the river on either side. The portion adjoining the river is being gradually cut away by the river. . . . The other portion of the citadel which is standing to a great height appears to be the most promising part of the site for exploration.

(It is surprising that a major site of this type has been overlooked in A. Ghosh 1989.)

Ahichchhatra

This site in the Bareilly district of U.P. is known as the capital of North Panchala and has been extensively mentioned in literary and inscriptional sources (Law 1942). By the eleventh century AD the position of Ahichchhatra as the capital of North Panchala was usurped by modern Budaon. A systematic archaeological investigation at the site was initiated in 1940–44 and renewed in 1963–65. The ruins at the site consist of a brick fortification of the shape of a rough isosceles triangle with a perimeter of about three miles and a half, enclosing a series of mounds, the highest of which, representing the site of a temple, stands to a height of 75 feet above the level of the cultivated field outside (Ghosh and Panigrahi 1946: 37–8). The nature of the defence wall around the site was clearly established in 1965–66, though even in the 1940–44 excavations it was found that this wall came to be built not much later than

100 BC and that a long partition wall in the late phase divided the fortified city into two sections—eastern and western—the eastern section being completed after the construction of a partition wall.

Sitigraphically the defence wall was built in the post-NBPW phase, dated in the early centuries AD, and found to possess four phases. In the first phase it was built of mud and in the second phase was 'reinforced at the apex by the construction of a free-built brick-wall, 4.98 m broad and 2.5 m high running throughout its length. To economise the use of burnt bricks rectangular gaps measuring 2.13 by 1.32 m were left in the brick wall at regular intervals and the openings filled with rubble and clay' (IAR 1963: 64). In Phase 3 this brick-wall was given the protection of a mud cover buttressed by another packing in Phase 4. At a still later stage gaps in the outer wall of mud packing were filled up by a fragmentary wall of brick and brick bats till finally a boundary wall in the northeastern corner of the site screened off the insecure area.

Little is known about the structures inside the fortified enclosure but it was noted that burnt bricks came to be used in the NBPW phase and were employed more widely in the succeeding phases. The 1940–44 excavations unearthed two terraced temples, one of which belongs to the early Gupta period. It was also pointed out in the 1940–44 excavations that 'each stratum (of Ahichchhatra) had its own plan and alignment of houses radically different from those of the next stratum' (Ghosh and Panigrahi 1946: 39). This point has not been emphasized in the subsequent report which, on the contrary, says that the houses 'followed the same cardinal alignment throughout the successive level' (IAR 1963–64).

Saketa, Ayodhya

According to A.N. Bose (1961: 205–6) Saketa and Ayodhya, both mentioned in the Buddhist sources and the Ramayana, were the same city, but in opinion to the contrary. B.B. Lal (in A. Ghosh 1989, II: 31–2) writes that the ruins at Ayodhya have a circuit of about 4 to 5 km and rise to a height of about 10 m above the surrounding ground level. Excavations and trenches show the NBPW in the earliest level with some mud and daub and mud house remains. A Jaina figure in terracotta (fourth–third century BC) and rouletted ware (c. first–second century AD or earlier) are among the noteworthy finds at the site. The archaeological investigation in the janma bhumi (birth-place) area begins with the NBPW phase and continues, with several structural phases up to the

third century AD. A massive wall of bricks in this sector before the third century BC has been interpreted as a fortification wall which appears to have had a fairly deep ditch 'almost like a moat' (IAR 1976-77: 52).

Halaskhera

This site in the Lucknow district (IAR 1978-79: 74-5, 1979-80: 71, 1980-81: 71, 1981-82: 71-2, 1982-83: 98-9, 1983-84: 85-9) has among other things, the remains of a road, a Gupta period citadel and some Kushan structures. The road, traced for about 120 m, had two phases. In the first phase it was 9.8 m wide and was built of burnt bricks 'in double-box pattern with parallel walls on either side and a road wall in the centre. . . . The boxes have been constructed at intervals of 2.30-3 m. All the boxes were found filled with compact blackish clay taken from the lake itself. The surface of the road was made of brick ballast mixed with earth. The double rectangular boxes were intended apparently to hold the dumped clay in position and prevent it from being washed away by water' (IAR 1981-82: 71-2). The road was 5 m wide in its second phase. The northern, western and southern walls of the citadel were 160 m, 157 m and 148 m in length, respectively. A big storage jar found in situ on the floor of a Kushan level house was found to contain some grain. This jar was placed on a specially constructed circular structure of bricks. This used to be a common feature of the houses of the period. There were also some house complexes of the Kushan period, with a space of 75 cm-1 m provided between the complexes (15 by 12 m, 11 by 4.5 m, 13 by 4.5 m) which possessed two or three rooms each. Some of these rooms were brick-paved while some of them had mud-plastered floors.

Kausambi

The references to Kausambi in early literature and epigraphical records have been collated by N.N. Ghosh (1935), Law (1939) and G.R. Sharma (1969). Among the more important references are notes that the *Saṅgīta Brahmana* refers to a person as Kausambeya, meaning perhaps a resident of Kausambi, a meaning substantiated by the occurrence of the word Kausambeyaka in this sense in one of the Bharhut inscriptions. Kausambi has been referred to in both the epics and according to one testimony, Kausambi was shifted from Hastinapur to Kausambi by Nishakha, who stood in the direct line of succession from the Pandavas. Usual Kausambi is known as the capital of the Varsas, Varsa being one of the seven

major states or *mahajanapadas* of India on the eve of the birth of the Buddha. Kausambi remained an important political centre in India through another half century. Some of the references in Buddhist literature are more precisely suggestive of Kausambi's early importance. The *Sutta* mentions it as one of the halting places in a journey from Pataliputra, modern Patna, on the Godavari in the Deccan to Rajagriha or Mithila. Obviously, it also lay on the route from the middle Ganges to the northwest. Another pointed reference is that three bankers of Kausambi—Ghosita, Kukkuta and Pavarika, all disciples of the Buddha—had three retreats for him in Kausambi, known respectively as Ghositarama, Kukkutarama and Pavarikambavana. Not merely does Hsueh Tsang refer to these but also the identity of one, Ghositarama, has indisputably been established by archaeology.

The literary and epigraphic importance of Kausambi has been amply reflected in the present ruins spreading over an area of eight square miles both inside and outside a fortified enclosure. The fortification itself is rectangular in shape and possesses a periphery of about 4 miles. The site lies on the left bank of the Yamuna, about 32 miles southwest of modern Allahabad. Cunningham's initial identification (Cunningham 1833: 33-5) of the place with ancient Kausambi was put beyond all doubt by the discovery in identification of the Ghositarama monastery (G.R. Sharma 1965: 44) and an inscription, dated AD 1565, on an in situ rock pillar at the site which refers to the place as Kausambipura (Law 1939).

Kausambi has been excavated extensively by G.R. Sharma (1958: 19-20; later IAR 1953-54 to 1966-67 with a gap in 1965-66). The 30 ft deep archaeological deposit at the site has been divided into four periods. The first three periods antedate the NBPW (Period III) while the last one post-dates it. Period I has some pottery among which black and red ware can be determined along with some elements which Sharma calls 'proto-black and red'. Period II yields PGW. There are twenty-five coins in this period, except for the first two and the last one they are all of the four main building stages of the fortification. The stratigraphic sequence of the site seems to depend on Periods III-V of the NBPW. The sanctity of the argument base (primarily on a study of the pottery) of the fortification should be called to the period of the NBPW. Kausambi, who, on the grounds of palaeography and numismatics, has been assigned to the period of the NBPW (G.R. Sharma 1960: 20). Again, on numismatics, the coins found here have been built by the Meghasthenes.

Kausambi their capital in the second half of the 2nd century AD. This numismatic arguments have also been supplemented by the evidence of inscribed terracotta seals, terracotta figurines and iron arrowheads. The end of the rampart has been placed between AD 510 and 525, the general period of the Huna invasion of the site. On the basis of this duration from the first half of the second century BC to c. AD 585 of Ramparts 3-5 and their associated sub-periods, the average span of a sub-period has been worked out to be seventy years. 'Assuming the same average span of time for the structural sub-periods associated with Ramparts 2 and 1 and also for the two pre-defence periods' (G. R. Sharma 1960: 22) the beginning of the fortification at Kausambi has been dated to 1025 BC and the beginning of occupation of the site itself to 1165 BC. So far as the chronology of the NBPW and the post-NBPW periods are concerned, the foregoing chronological argument should not be in any doubt and as Sharma (1969: xx-xxiii, chart on p. xxii) demonstrates, the C-14 dates (all obtained from the NBPW phase) substantially support his argument for these phases. His chronology for the first two periods, however, leaves one baffled. The method by which he estimates their dates (assigning an average span of seventy years to all the sub-periods including the earlier ones) has, of course, been utilized earlier in Indian archaeology (cf. Wheeler's dating of the neolithic level of Brahmagiri) but it is never a dependable one. Secondly, Kausambi lies on the southern periphery of the PGW distribution and as such its date in this region is likely to be later than at such classical sites as Hastinapur and Atranjishera. Moreover, the PGW continued up to the advent of the NBPW around 700 BC and is even likely to have coexisted with this for some time. There is not much reason to assume that the PGW at Kausambi dates from its earliest time bracket and not from the later one. In fact, the probable laterness of the PGW at Kausambi has already been pointed out by some scholars (K. K. Sinha 1973). Moreover, the published section across the Kausambi defences reproduced 'uninscribed rectangular cast coins' in a layer which is depicted as belonging to the phase of the PGW. This should suggest that the PGW at Kausambi belongs to a later period than has been assumed. As long as radiocarbon dates are not obtained for the three periods of Kausambi, it is not possible to estimate their dates precisely. For the present a general position of their being pre-NBPW should suffice without any precise chronological emphasis.

The most imposing component of the present ruins at Kausambi is formed by her defences. The rampart wall rises to an average height of 35 ft. (10.6 m) from the level of the surrounding plain with the inner

towers reaching the 70-5 ft. (21.33-22.86 m) level. There were eleven gateways in all, of which five - (two each in the east and the north and one in the west) - have been considered to be the principal ones. The road leading to each gate was flanked by two mounds, obviously watch-towers which lay across a moat encircling the rampart (except, of course, on the river side). About a mile away from this complex, there is another ring of mounds that once might have encircled the city.

The rampart was built initially of mud, the outer side being revetted with burnt bricks. This burnt brick revetment 9 ft. (less than 3 m) wide at the base had a batter with two different angles. Finally, it was covered by a 2-3 in. (50.8-76.2 mm) thick mud and lime plaster. The earliest moat was dug some time later and at the same time a mud bund with a basal width of 32 ft. (9.75 m) and an approximate height of 18 ft. (5.48 m) was built at least 1 m. (about 24 ft. 7.31 m) from the revetment of the existing rampart. Still later, in the second main stage of the rampart's history, the rampart was raised and the gap between the original rampart and its subsidiary mud bund was filled up with clay and a new subsidiary mud rampart was laid out at some distance. It was during this period that guard-towers, bastions and a stone corbelled drain were added. The rampart was extended further in its third stage. An interesting discovery which belongs to this stage was that of an altar situated outside the eastern gate at the foot of the defences, shaped like an eagle flying up to the southeast and associated with a fire place, and animal and human bones including human skull. G. R. Sharma (1960: chapters 8-10) has deduced a mass slaughter by his finds to suggest that certain details of the construction of this altar correspond to the fire altar prescribed for *purnima-nach* or human sacrifice in ancient Indian ritualistic texts. Additions and alterations continued to be made to the rampart till its final stage.

Excavations inside the fortification revealed only a limited area of the interior, the potential quarter of the city. Whatever evidence there is suggests that the houses conformed to the usual pattern of having a central courtyard. An important discovery is that of a road 16 ft. (4.87 m) wide built subsequently widened to 16 ft. (4.87 m). It is flanked on either side by regular latrines. The drainage system consisted of earthenware pots and regular burnt brick drains. There were also a number of wells.

One of the most important discoveries is that of a palace occupying an area of 315 ft. (96 m) in the eastern corner of the fortified area. Before the beginning of the NBPW phase at the site, the palace had three main halls. In the Gupta phase it was built further and was laid with plaster

In the second phase a dressed stone facing was provided to the walls while in the last phase the walls were made of burnt bricks but with a facing of dressed stone. The internal plan seems to have consisted of halls flanked by rooms, often interconnected by arched passage-ways. It has been argued (IAR 1960-61: 33-5) that the palace belonged to Udayana a king of Kausambi who was a contemporary of the Buddha. In any case, the entire palace-complex resembles an inner citadel within the bigger fortification of Kausambi.

The 'Ghositarama' monastery lay inside the fortification, between the eastern gateway and the northern bend of the rampart. The identification has been possible due to the find of a terracotta sealing belonging to the monastic order of 'Ghositarama'. The central plan of the monastery with several building phases comprised a central courtyard with rooms arranged around it. The basic importance of this discovery is that it closely ties up with the life of the Buddha and is thus of immense chronological and historical significance.

Kausambi as a city met its end at the hands of the Hunas in the sixth century AD. It may be mentioned at this point that after G. R. Sharma's death there has been severe criticism (B. B. Lal 1985 a, 1985 b) of the claims of his discoveries of the eagle-shaped altar (syena-chitra) and the palace of Udayana. In the former case it has been argued that this represented nothing more than fallen debris whereas in the second case the whole structural complex has been put in the medieval period. The fact that these criticisms were aired in print only after G. R. Sharma's death has considerably lessened their value. Further, Erdosy (1984) has tried to postulate, on the basis of surface scatters of pottery (especially the NBPW), a developmental sequence of Kausambi. However, surface scatters on a site are remarkably unsure guides to the areas of occupation in different periods.

Bhita

The ruins at Bhita with traces of an oblong fortification pierced by gateways lie about 35 miles downstream of Kausambi. Cunningham ('report', vol. 3) identified the place with the old Bitbhaya Pattana, a town mentioned in the Jaina text as being contemporary with the founder of Jainism, Mahavira. Marshall (1911-12) identified it with Vichchigrama primarily on the basis of the occurrence of this name in one of the excavated seals. The preliminary work by Cunningham at Bhita was followed by Marshall who excavated it more elaborately and revealed

some part of the town plan. Marshall's excavations were primarily confined to the southeast corner of the site and here he excavated two streets named High Street and Bastion Street. High Street, marked about 30 ft wide, led to a gate, the plan of which could not be reconstructed but which, Marshall supposed, consisted of two or three gates 'with projections attached disposed at intervals along the roadway, which ran between the high flanking walls'.

Bastion Street, somewhat narrower, lay to the northeast of the High Street. The defences were to its southeast and consisted of an 11 ft 2 ins thick wall, raised on an earthen rampart. This possessed a quadrangular bastion, which projected 15 ft (4.57 m) from the outer curve of the wall and measured 31 ft (9.44 m). The wall built in the early Mauryan or pre-Mauryan period originally possessed a gateway at this point which was subsequently closed.

A house on High Street, which is supposed to date to the Maurya period and which Marshall names 'House of the Guild' on the basis of a terracotta seal (with a mention of the word 'Nigama' or guild) found in one of its rooms, had twelve rooms arranged around an open rectangular courtyard. The house perhaps had a second storey and was rebuilt several times. Several other large houses have been excavated but the general plan was similar. In most cases, the houses were fronted on the roadside by a row of pillars which had in front of them a raised platform or verandah, a feature which may still be seen in Indian bazaars.

The excavated structures and antiquities (quite a few of the seals seem to bear names of merchants) suggest that Bhita, whatever its name was at the time, was a prosperous trade centre. As at Kausambi, its occupation was likely to have come to an end due to invasion by the Hunas. It has been noted here that Bhita is the only city-site in the Gangetic plain which has been excavated extensively enough to reveal a coherent picture of urban layout.

Other sites

There is a site about 1 km long along the eastern bank of the Ganges and of considerable width has a strong association with the Ramayana, both as the site of Kishkinda's hermitage and as the place where on his way to Lanka, Rama crossed the river. B. B. Lal's excavations at the site (1977-80) have taken the antiquity of the place back to the last quarter of the second millennium BC (OCP) but were primarily concerned with the Iron Age complex dated in the late centuries BC (B. B. Lal 1993).

The way in which the water of the Ganges in high flood was channelled into this complex with a total storage capacity of about 2 million litres of water, desilted and stored there for drinking and ritualistic purposes was no doubt a tremendous achievement of the contemporary Indian hydraulic engineers. The neat and careful way in which the total plan of the complex has been archaeologically uncovered over the years and eventually published by Lal and his team (principally from the Archaeological Survey of India) is a significant landmark in the history of Indian archaeology in recent years. However, the other structural details are meagre and the following account of a late Kushan structural complex may be representative.

The complex revealed two units separated by a corridor, having some 11 brickbats on the eastern side. The southern unit of the complex was provided with five rooms having four small interconnecting doors. The sizes of the rooms were 2.40 by 2.05 m, 4.25 by 2.65 m, 3.35 by 3.35 m and 3.35 by 2.55 m respectively. The size of one room could not be ascertained. However, in one of the rooms lying on the southwest corner of the complex a cellar about 2.0 m deep with thirty-eight courses of burnt brick was encountered. From its debris a small copper bowl and remains of seeds and other pulses were also noticed. The northern unit of the house complex also consisted of five rooms of various sizes: 2.40 by 1.95 m, 4.15 by 2.25 m, 3.00 by 3.75 m, 3.20 by 3.20 m, a corridor, a verandah, 6.55 by 2.00 m, along with several doors opening toward the courtyard (IAR 1984-85: 85-6).

MIDDLE GANGETIC VALLEY (EASTERN U.P. AND BIHAR)

Rajghat

On the basis of a terracotta sealing bearing the legend '(the seal of the city administration of Varanasi)' inscribed in Gupta characters, ancient Varanasi, a city with extensive early literary references, may be identified with modern Rajghat 'an extensive table land rising about 6.1 (18.28 m) above the surrounding ground-level' (IAR 1957: 58-5) on the northeastern outskirts of modern Benares. The site lay between the river Varuna in the north and northeast and the Ganges in the southeast. The result of an accidental discovery in 1940, the site has come to be extensively excavated since 1957-58 (Narain and Roy 1976, 1977; Narain and Singh 1977).

The literary sources, particularly the Jatakas, are unequivocal about its importance as a trade-mart and commercial centre and its connections with such distant places as Taxila. It was, in fact, the meeting point of important trade-routes: on the one hand it was connected by river with the

trade-mart centres further downstream and on the other a route went from Rajghat to the northwest. A land route also went to Vaisali and if a reference to the latter is correct, there was also a route down the river to the sea and the Bay of Bengal (H. Chakrabarti 1966: 178-81).

The occupational sequence of the site is found to comprise five or six periods. Period I, dated 800-200 BC, possesses three sub-periods. Sub-period IA yielded black-and red, red-slipped and coarse gritty red ware.

Iron was used from the very beginning. The NBPW was introduced in sub-period IB which also showed the remains of a burnt clay floor and some pits provided with terracotta rings. There were new ceramic ware in sub-period IC which had in addition some terracotta ring-pots. Period II, dated between c. 200 BC and the beginning of the Christian era, had two structural phases. In the earlier phase was found a house with a room, a vestibule, a bath and a well. In the upper levels of this period there were the remains of a brick-foundation and a terracotta ring-pot. On the basis of some 'impressive' structures, Period III, dated from the beginning of the Christian era to the end of the third century AD, has been considered to be the most prosperous phase at the site. The extensive structural activity also continued in Period IV dated from c. 300 AD to c. 400 AD while Periods V and VI have been found to be medieval.

The most important structural remain of the site is, however, the rampart which has been found to go back to the NBPW phase of the site. This rampart, lying almost on the natural soil belongs to the middle, if not the latest, phase of this period. This rose to a height of about 10 m with the rounded slope towards the river. Subsequently, on the north side of the settlement a channel or ditch was dug to connect the Varuna to the Ganges. 'A series of alternating deposits of sand and silt on the toe of the rampart indicated that it had been breached several times by heavy floods, which also affected some portions of the habitation' (IAR 1950-61: 37). A wooden platform associated with the rampart on the Ganges side has also been reported. It is difficult to fathom its exact use but it may have been a watch-tower or a platform for the

Kheradih, this site (IAR 1980-81, 1981-82, 1982-83, 1983-84: 6) on the Sarayu river in the Ballia district of eastern U.P. belongs to the pre-NBPW black-slipped and black-and-red ware and is principally a Kushan period township. At least one

major street (of varying width) and some lanes were isolated along it, some structures including a two-roomed house with a veranda, a room and an attached drain. There is also reference to an underground structure (2.04 by 1.68 m). An interesting discovery is that of a blacksmith's workshop in the NBPW level.

Narhan

The early historic site of Narhan located near the river Gomti in the Gorakhpur district is about 10 ha in extent (Mound I) and begins with a chalky, thin black and red ware deposit with iron towards its top. It certainly features in Period II with black slipped ware. Possibly NBPW also occurs during this period. Structural evidence is meagre and it is suggested that the settlement of Mound I was deserted around 450 BC.

Jhusi and Ghosi

Both these sites are unexcavated. The former is near Allahabad on the opposite bank of the Ganges, and the latter is far to the east in the Azamgarh district and is locally known as Nahush-ka-Tila. The ruins at Jhusi cover several modern villages and the river section along the site is worth observing. Ghosi which has yielded NBPW shows 'a large mud wall part with openings, possibly gateways, on three sides except the east' (A. Ghosh 1989, II: 148).

Saheth Maheth

Since its initial identification by Cunningham (1963 reprint: 343) as an ancient Sravasti on the basis of a locally found dedicatory inscription of a Buddha statue, the site of Saheth Maheth on the border of Uttar Pradesh and Bahraich districts in U.P. has had a long history of archaeological investigations. Cunningham's identification was doubted by W. A. Smith (1924: 31, n.2) who, mainly on the basis of the itineraries of Hsuan Tsang and Hsien Tsang, placed Sravasti somewhere in the Nalanda territory where the Rapti leaves the hills. The subsequent excavations have, of course, amply vindicated Cunningham's idea. What problem emerges from a brief review of the literary data (Law 1935) is that it was a 'nervic centre of the commerce and a number of towns emerged from here, which connected several cities of northern and western India. It had routes for Saketa, Rajagriha, Kausambi, Varanasi,

Varanasi, Sandasya and Takshashila. It had direct trade-routes for Ujjayini, Mathura, Pratisthana, Bharukaccha and Surparaka' (B. Srivastava 1968: 76).

The local name of the ancient fortified city-site is Maheth, while Saheth is about 400 m to the west, represents the ancient monastery site of Sahetha celebrated in Buddhist literature as a gift of the merchant Anathapindaka to the Buddha. On plan, the city-site of Maheth is 'an almost semi-circular crescent with a diameter of one mile and a third in length, oriented inward and facing the northeast along the old bank of the Rapti river' (Vogel 1977: 83). The total circuit of the enclosing rampart, which is only rising to 40 to 13 m above the surrounding ground level, is slightly more than 5 miles (8 km). There are remains of ancient habitation outside the fortified enclosure also.

A number of gateways are clearly visible on plan and Vogel argues that what is locally known as the Tamarind Gate on the western arm of the rampart 'has distinctly the aspect of a main entrance to the ancient city' (Vogel 1977: 82). This remains unexcavated. The excavated gateway is known as the Nausahra Gate on the eastern arm of the rampart and is described as 'one of the main gates of the city'. The city wall at this point is about 9 ft (less than 3 m) wide and is built on the top of an earthen rampart. On both sides of the gate the city walls 'curve inwards so as to form two bastions leaving a space of 60 ft in width in between'. Immediately south of this there are two rooms which may have been guard-rooms.

The construction of the rampart has been made clear by the 1958-59 excavations. It was built in Period II of the site, Period I belonging to the 1st sub-period.

In the 1st sub-period, the rampart had a basal width of 95 ft. The highest point wherefrom it sloped on either side was noted to be 12 ft above the ground level. Between this and the subsequent sub-period were encountered a pottery and ash-dump on the outside and seemingly occupational features on the inside, suggesting that for some time the rampart had fallen into disuse. In the second sub-period the rampart was raised, possibly as a parapet over the rampart. In the 3rd sub-period the height of the rampart was raised by mud-filling, while in the 4th sub-period a brick-structure was built above that filling (IAR 1958-59: 50).

On the basis of the stratigraphic and other evidence, Period III has been dated to the 2nd century AD. The habitational remains outside the rampart is very

limited. What has been called 'Kachchi Kuti' in the eastern sector of the rampart may generally be a temple site while 'Pakki Kuti' may be a stupa. There was a stupa called Stupa A on the eastern edge of the rampart.

Sabeth, the site of ancient Jetavana, is a monastery site, containing shrines, monasteries and stupas, the earliest of which, dated to the Mauryan period, has yielded a stone casket containing bone relics together with a gold leaf and a silver punch marked coin (Marshall 1900: 11). The recent excavations at the Jetavana site were conducted on the southern and northwestern periphery of the mound. Two periods have been postulated: Period I—first century BC–first century AD and Period II—third–sixth centuries AD. Forty-one structures of burnt brick, mostly remains of walls and cells, divided into six structural phases were found in 1986–87 (IAR 1986–87: 76). In the next season (1987–88: 106) a Kushan period tank and a monastic complex were noticed. Rectangular in plan, the tank has an enclosure wall and three terraces.

Ganwaria

Ganwaria and Piphrawa are the city and stupa sites of the ancient city of Kapilavastu in the Basti district of eastern UP. The long-standing dispute regarding the identification of the capital of the Sakyas, of whom the Buddha's father was the chief, was resolved with the discovery of the monastic sealing of Kapilavastu at Piphrawa in the Archaeological Survey of India excavations at this site and the city site of Ganwaria under K.M. Srivastava in 1973 (Srivastava 1986). The monastic site of Piphrawa yielded the ruins of three major monasteries, two shrines, a pillared hall, a votive stupa and the main relic stupa which originally was erected by the Sakyas over the corporeal relics of the Buddha. Measuring 300 m (north–south) and 270 m (east–west), the town site of Ganwaria is now a little more than 8 ha. in extent, but Srivastava (1986: 61) points out that the original extent was much more. The 7 m thick occupational deposit was divided into four periods: Period I—fine grey, black polished ware wares; Period II—NBPW; Period III—Sunga; Period IV—Kushan. It is not that a great deal of evidence regarding town-planning has been obtained. Two monasteries (36 m square and 26 m square), which had monastic cells around a courtyard with a major projected gate-way entrance on one side, two shrines, a large structure identified as a pillared hall and miscellaneous house-remains constitute the basic structural remains. In the first period of the site the houses were built of mud. The use of burnt bricks became extensive only during the NBPW period and later.

Tilaura Kot

According to Vincent Smith (1924: 167, n.3), Kapilavastu, the Sakya capital in the Nepalese terai was 'certainly represented by Tilaura Kot and its adjoining ruins'. While there is as yet no positive proof, according to P.C. Mukherjee, who dealt extensively with the problem of identification, 'no other ancient site has so much claim on the identification of Kapilavastu as Tilaura, as being situated in the right position and fulfilling all other conditions' (Mukherjee 1901: 50).

The fortified site, as explored by Mukherjee, is roughly rectangular, about 1600 feet north to south by 1000 feet east to west' (Mukherjee 1901: 40) with traces of habitation outside the fortification. Originally it appears to have been a mud fort, on which subsequently brick walls were raised. The mounds on the rinned walls are easily distinguishable on all the four sides. The brick fort was protected by a deep ditch on all sides, also by a second mud wall and a second but wider ditch' (Mukherjee 1901: 41).

The 1961–62 excavations (IAR 1961–62: 73–4) have clearly established the stratigraphy of the site. The pre-defence Period I had two phases with the entrance of NBPW from the beginning. Three terracotta ring-wares were discovered in Phase A. The mud rampart was built in Period II with a moat outside. On the sloping outer face of the rampart there was a fortification wall of bricks and brickbats. 'The contemporaneity or otherwise of the wall with the mud rampart could not definitely be established in view of the absence of a foundation trench for the former and of any occupation on the mud rampart' (IAR 1961–62: 74). No continued plan of the habitation inside the rampart has been obtained.

Lauriya Nandangarh

Lauriya Nandangarh, which is about 15 miles to the southwest of Bettiah in Champaran in north Bihar, was excavated successively by T. Bloch (1911–12: 26, 1904–5: 38–40), N.G. Majumdar (1935–36: 55–66, 1937–38: 50) and A. Ghosh (cited in A. Ghosh ed. 1950: 60–1). The site is on an important route to the Nepalese terai. That the route to the Nepalese terai from the middle Gangetic valley was important in early times is very clear from the distribution of the Asokan pillars at Basarhi, Lauriya Nandangarh, Ramparwa and finally Lumbini. The site itself has two components: Lauriya which possesses the Asokan pillar and a number of burial mounds, all indisputably of pre-Mauryan antiquity, and Nandangarh, about 400 m to the southwest,

forming an irregular quadrangle to house a huge terraced stupa dated roughly between the first century BC and the second century AD. The Asokan pillar, the burial mounds and the terraced stupa do not in themselves make Laurya-Nandangarh a city site but it appears that a considerable area in the vicinity of the terraced stupa was once fortified and Majumdar himself refers to mounds possibly with dwelling remains.

Balrajgarh

So far as archaeological evidence goes, Balrajgarh in Darbhanga, north Bihar, was an extensive fortified habitational centre but it has not yet been identified with any settlement mentioned in early literature. Excavated in 1962-63, the defence wall is found to have

consisted of a mudbrick core with brick encasement, the outer one being four times the width of the inner. The wall was battered and measured 5.18 m at the base and 3.65 m at the top. Three phases of construction including repairs were recognized. The earliest phase consisted of a mudbrick core with battered brick revetments, of which the outer had approximately three times the width of the inner. In the second phase a brick-concrete ramp was built against the inner face. The third phase witnessed further reinforcement of the ramp in the shape of a 3 m high platform of earth mixed with potsherds, built against the inner face of the fortifications (JAR 1962-63: 5).

The fortification seems to have been built in the second century BC. The remains of a temple (of uncertain date) have been recovered inside the habitation area.

Katragarh

This site in the Muzaffarpur district of Bihar is noted for its Sunga period fortification with three phases of construction. In the first and third phases it was built of burnt bricks whereas in the second phase it is represented by a massive mud core and moat. In the third phase the burnt brick defence wall with sloping sides was 2.60 m at the base. Two watch towers have also been exposed. This site has also not been correlated with any settlement mentioned in literary sources.

Basarh

The identification of ancient Vaisali with the ruins in and around the modern village of Basarh (Muzaffarpur district, Bihar) was first proposed by Cunningham (1963 rep.: 373-6) in 1861-62, and after initial confir-

mation (see Patil 1963: 21-2) the point was finally settled by T. Bloch's excavations in 1903-4 which yielded, among other things, a few inscribed terracotta sealings with the name 'Vaisali'.

The history of Vaisali as a city has been adequately surveyed by Y. Misra (1962). Geographically it was not merely in the heart of a fertile agricultural district but also it lay on the route from Magadha or south Bihar to the Nepalese terai. As the capital of the oligarchical tribe of the Lichchavis during the time of the Buddha and also as the place where the Second Buddhist Council was held after his death, Vaisali repeatedly figures in Buddhist literature. It is also important in Jaina sources as the birthplace of the first Jaina preceptor, Mahavira. The Puranic tradition is less equivocal and associates it with the legendary king, Visala. Among the later references, Hsuen Tsang's account is the most extensive.

In 1903-4 Bloch published a map showing the remains of ancient sites in the area, which seem to fall into two main clusters. First, there is an extensive mound, about 6 to 10 ft (1.82-3.04 m) high, locally known as 'Raja Visal ka garh' (fort of King Visal) whose circuit is about 5000 ft (1524 m), closely approximating Hsuen Tsang's estimate of the periphery of the royal precinct of the city (Patil 1963: 23). Traces of round towers may be observed at the corners and a surrounding ditch, presumably 150-200 ft (45.72-60.96 m) wide, is now filled up and under cultivation. Traces of an embankment across the ditch suggest that the main entrance to the enclosure was in the centre of its southern side. In the vicinity of this main mound there are a few smaller ones, generally identified with some of the Buddhist ruins mentioned by Hsuen-Tsang. In addition, there is a brick tank locally known as Khorana Pokhar and generally supposed to be the fortification tank of the ancient Lichchavis. The second group of ruins lies about two miles to the northwest and comprised primarily an Asoka pillar in an ancient brick-lined tank associated with a Buddhist legend and the remains of a brick stupa.

The city itself was in the area of the first group of ruins though its precise boundaries are now not easy to demarcate. Bloch writes:

According to modern tradition, the four corners of the ancient city of Vaisali are marked by four lingas or Mahadevas, of which the two northern ones are visible and the two southern ones hidden. Hence their name 'Gupta' Mahadeva. The four lingas thus have formed an irregular quadrangle, the eastern side being about two-thirds of the western. . . . There are traces of an old earthen wall between the two 'Gupta' Mahadevas (Bloch 1903-4: 87).

The 'Raja Visal ka garh' or the main mound has been subjected to repeated excavations but not with very comprehensive results. The earlier exca-

sations of Cunningham, Bloch and Spooner revealed primarily a wealth of antiquities, a few terracotta ring-wells and an assortment of structures, the earlier group of which was dated by Bloch to not later than the fourth-fifth centuries AD. Spooner's (1913-14) attempt to trace the fortification wall was not successful and he suggested that the mound possessed only an earthen embankment. The fortification wall with its three main periods was, however, traced in 1958-59 (IAR 1958-59: 12). In Period I there was a burnt brick defence wall, about 20 ft wide (c. 6 m) and roughly ascribed to the Sunga period, i.e. to the second century BC. In Period II, which was not much later, there was a massive earthen rampart, which was 68 ft (c. 21 m) wide at the base and 21 ft (c. 6 m) wide at the extant top with an extant height of 13 ft (c. 4 m). The moat was dug during this period. In Period III, dated 'late Kushan-early Gupta' (third-fourth centuries AD) the wall was brick-built again and was 9 ft (less than 3 m) wide, with 'military barracks' attached. Inside the fortified enclosure a network of structures has been revealed and their periodization conforms to that of the defence wall. Building activities seem to have been the most in Period II.

In 1957-58 a tank, generally supposed to be the Lichchhavi coronation tank, came to be excavated. A wall was traced for a considerable stretch at the slope of the tank embankment and at one place 2 ft (c. 0.6 m) below the foundation level of this wall, a 'concrete platform' was discovered.

The antiquities in the intervening deposit and in the layers underlying the surface earth of the tank deposited on its embankment included cast coins and terracotta figurines stylistically assignable to the Sunga age, which were dated to the date of the wall. The original tank of the Lichchhavis might have been a small one which was subsequently enlarged and surrounded by a wall representing its present remains in about the second century BC when the Lichchhavis might have once more become powerful after the downfall of the Maurya empire (IAR 1957-58: 10).

A small mound to the northwest of the tank, when excavated in 1957-58, revealed a stupa which was originally built of mud but was subsequently encased in burnt bricks. Chronologically this could have been built 'any time' between 600 and 200 BC (IAR 1957-58: 11). The excavators prefer to identify it with the stupa reputedly built by the Lichchhavis over the remains of the Buddha. Limited excavations in other areas (Sankar and Roy 1969) have unearthed primarily the general occupational sequence of the site which begins with the black-and-red ware succeeded

Muner and Manjhi

Muner is a high mound or a set of mounds overlooking an old bed of the Son about 32 km to the west of Patna. The site, although subjected to excavations for several years (IAR 1984-85: 11-12, 1985-86: 11-12, 1986-87: 25-26, 1987-88: 11-12) has yielded little except for showing a continuous sequence with the Chalcolithic stage and continuing upto the Post-Pataliputra from which a large structure has been reported.

Manjhi (IAR 1983-84: 15-16, 1984-85: 12-13) on the left bank of the Ganga in the Saran district is a high mound too and shows a similar sequence where a defence wall was apparently constructed in the last phase of the NBPW.

Pataliputra

The Magadhan capital was shifted from Rajagriha to Pataliputra under Udayin, the grandson and successor of Ajatasatru. With the increasing power of the kingdom of Magadha and the development of trade and commerce along the Ganges the site of Pataliputra or modern Patna at the confluence of the Son (which has now shifted about 20 miles to the west but once flowed close by) and the Ganges was obviously considered more suitable as the capital than the older one of Rajagriha or Rajaputra which was away from any river traffic. Earlier, Ajatasatru built a fort at the site, then associated with the Lichchhavis whose territory lay across the river (for a comprehensive discussion, Patil 1963: 373-8).

Pataliputra came to be the meeting point of some of the most important trade routes in the world. From Pataliputra three great routes radiated to the four corners of the Mauryan empire: the south-western to Barygaza (Barbarikon) in the Gulf of Persia, the north-western to Nepal by Varanasi and Sravasti and the north-eastern to Bactriana by Mathura and upper valley of the Indus' (H. Chakrabarti 1966: 182). Downstream, Pataliputra was connected with Tamralipta in the Ganges delta and thus perhaps with Southeast Asia. If the idea of a route to China from the Gangetic valley through Assam and Burma is correct, it was also probably connected with

the Mauryan records of this site the most significant is that of the Mauryan palatine (Majumdar 1960) who refers to the general size and the arrangement of the city that included palisade towers for shooting arrows around the periphery, the encircling wall which also served as the sewer, and the Mauryan palace with its

pillared hall and gardens. Partly because of this elaborate classical reference and partly because of its great significance in the history of India as the centre of the Mauryan empire, the site of Pataliputra has attracted scholarly attention since the late eighteenth century (Patil 1963: 378). Since the late nineteenth century the site has been subjected to sporadic excavations but modern construction over most of the ancient site and the presence of subsoil water have never allowed the excavations to be extensive.

According to Megasthenes the city was 80 stadia (little more than 9 miles) long and 15 stadia (about 1–1.3 miles) wide—roughly the same size as modern Patna. It is unlikely that the actual demarcation of the boundaries of the ancient and modern cities correspond, though there were 'traces of extensive ruins spread and interspersed over almost the entire length of the modern habitation' (Patil 1963: 380). Of the seventeen ruins discovered in ancient Pataliputra, two—Kumrahar and Balanagar—happen to be very significant. At both these places the excavated remains largely substantiate Megasthenes' observations.

The remains at Kumrahar comprise primarily traces of a pillared hall and a series of wooden platforms nearby, both discovered by Spooner in 1913–15 but reinvestigated by Altekar and Misra in 1951–55 (Altekar and Misra 1959). In the pillared hall there are traces of ten rows of pillars, with eight pillars in each row. Seventy-two of them, in the form of cylindrical shafts of ash with pillar fragments in them, were found by Spooner while eight more were added by Altekar and Misra, with evidence of four additional ones which formed part of a porch. Spooner could not find the bases or pedestals of the pillars but Altekar and Misra found that they were fixed on wooden basements, each 4 ft 6 ins (1.37 m) square, which were laid on a compact layer of blue clay, 6 ins (0.15 m) thick. The height of the pillars was about 32 ft (9.90 m) with 9 ft (2.74 m) buried in the plinth. The enormous quantity of ash in the excavated area and the few pieces of wood suggests that both the floor and the roof were made of wood. The shape of the roof has, however, not been determined. The wooden ceiling might have been covered by a brick work and lime plaster, as both bricks and fragments of lime plaster have been found in the ruins. No side wall has been discovered and it is likely that the hall was open on all sides. It was burnt down in the early Sunga period (second century BC). Till now there is no positive proof that there were any other buildings near the pillared hall or that it was surrounded by a fortification wall.

To the southeast of the pillared hall, only about 15 ft (4.5 m) away,

Spooner excavated seven wooden platforms, each 30 ft (c. 9 m) long, 5 ft 4 ins (1.62 m) broad and 4 ft 6 ins (1.37 m) high. They lay parallel to each other and extended from north to south. Five platforms were found to have three rows of pillars of the hall. They were made of logs of 'sal' which the horizontal logs were carefully placed and joined together and supported by deeply set vertical pieces both at the edges and the centre. Altekar and Misra found no new platform but suggested on the basis of the study of the stratification that there was once a canal at the spot leading to the Son. 'It is possible to make a new conjecture about the purpose of the wooden platforms. They probably supported a broad wooden staircase of about 30 steps, each step being 24 ft in length and 6 inches in height. This staircase was used by distinguished visitors, coming to the Hall by boat' (Altekar and Misra 1959: 25).

At some distance from the complex of the pillared hall Altekar and Misra also found the remains of a Buddhist monastery, called the Arogya-vihara monastery, according to an inscribed terracotta seal and dated on the same basis to the Gupta period. The remains of an apsidal brick monastery, dated between AD 100 and AD 300, have also been discovered.

In the Balanagar area, northwest of Kumrahar, the primary ruins comprise vestiges of a wooden palisade, excavated haphazardly over a number of years but principally by Spooner in 1915–17. There were two parallel walls of wooden uprights (each with a section of 1 ft 3 ins (0.38 m) by 1 ft 10 ins (0.55 m) separated by a width of about 12 ft 4 ins (3.75 m). The space between the two walls was covered, at 22 ft (6.70 m) across the surface, by a floor of squared timbers fitted into the slots of the vertical uprights. The uprights went 5 ft (1.55 m) deeper than this floor-level and rested on a bed of grave foundation. They were found to be about 4 ft (1.21 m) high. Intermittent excavation pits traced this complex over a 135 ft (41.15 m) long (6.8 m) wide area. Initially the alignment was found to be from north to south, but at one point in the east, the lines of upright timbers were found to bend, indicating that the wall, somewhere here, took a bend to the east. In later years (1922–23 to 1928–29) M. Ghosh (cited in Ghosh 1934: 5) found a long octagonal post nearly 16 ins (0.40 m) in diameter in this wall and he suggested that this might be the post of one of the gates of the palisade. He also discovered a wooden drain about 16 ft (4.88 m) high 1.90 m and 1.06 m high running mostly along the line of the wall.

The alignment and the extent of the palisade have never been made known. The topography and consequently the precise date also remain uncertain. But on circumstantial evidence this may logically be ex-

plained, as has been done by Spooner and others, as the wooden palisade encircling the city in a description given by Megasthenes. Haphazard excavations and accidental discoveries have been made in various parts of the city but these are too disjointed to suggest any coordinated pattern.

Rajgir

When the kingdom of Magadha in its early stage was in feud with its neighbours, Rajagriha, ensconced in a hill-valley about forty miles southeast of Patna, was the capital, it was in a strongly defensible position offering security. Besides, it lay close to the rich mineral and other raw material deposits of modern Bihar, control of which, according to one opinion, could have given Magadha an edge over the other contemporary aspirants to political power. In this connection I emphasize that it is the proximity of Magadha to the entire resource-rich Chhotanagpur plateau which has to be considered here. There is, in fact, no point in drawing attention to the iron ore deposits alone because the major iron ore deposits which lie at the southern edge of this plateau were not used until recently. As the literary sources (Law 1938) suggest, Rajagriha had many historical and mythical associations. On the one hand, it was closely associated with the life of the Buddha, the early Magadhan court and other religious groups like the Jainas and the Ajivikas. On the other, it was supposed to have been established by the legendary king, Jarasandha. The Jarasandha legend referred to in the Mahabharata persists in modern local tradition and it is possible that it evokes a dim prehistoric tribal memory, losing its intelligibility afterwards. On the economic level Rajagriha was a terminal point of the early trade-route linking the middle Gangetic valley with Paithan on the Godavari. I have argued elsewhere (Chakrabarti 1963) that Rajagriha as a trade centre could mediate the raw materials available on the Chotanagpur plateau lying immediately to the south of this first Magadhan capital.

The archaeological investigations at Rajgir began in the middle of the nineteenth century and continued sporadically upto the present, with the result that the basic lay-out of the site is now amply clear and most of the ruins intelligently studied. On the negative side, the explorers have been preoccupied mostly with the problem of the identification of the ruins with the monuments described either by Hsuen Tsang or in early Buddhist literature—a natural enough trend considering the close association of the site with the Buddhists and their elaborate records. Though a beginning was made in 1950 (A. Ghosh 1950, 1951), very little attention has been

paid to the task of tracing the cultural growth of ancient Rajagriha (for details of the argument, see Chakrabarti 1976).

There are actually two cities at the site—Old and New Rajagriha. Old Rajagriha lay entirely within a valley surrounded by five hills on all sides, each given a name in the Mahabharata and the Jaina tradition. The valley possesses two rivulets, the Sarasvati and the Banganga. New Rajagriha lay in the level plain to the north of the hill-girt valley. D.R. Patil (1963: 46) argues that there is no chronological basis to warrant a division between the Old and New Rajagrihas. In 1961-62 the inner rampart around New Rajagriha was partly excavated and it was found to rest on a basal deposit towards the end of which the NBPW and punch marked coins appear. Period II has two sub-phases, A and B. The rampart was built to suggest a somewhat late date for the citadel wall of New Rajagriha and it is possible that the naming of the settlement in two parts, Old and New, reflects a reality.

Along the crest of the hills encircling Old Rajagriha there is a stone fortification wall called the outer fortification. Its plan published by A. Ghosh (1950) differs somewhat from that published by Marshall (1905-6). In Ghosh's plan the fortification extends without any break on all the hill-tops while, according to Marshall, 'the break in the line of fortifications to the east of Chhata giri is a considerable one, and it is possible that the fortifications were never completed at this point' (Marshall, 1905-6: 88). Moreover, Ghosh shows a wall extending south-eastwards from the main alignment of the fortification on the Sona hill, which does not appear in Marshall. The total length of the outer fortification as it exists in traces may come to about 12-13 miles according to Marshall while Ghosh speaks of its extension 'over a length of about 25 to 30 miles along the crest of the hills' (Kurashii 1958: 33).

The walls are built of massive undressed stones between three and four feet thick, carefully fitted and bonded together, while the core between the faces is made of smaller blocks less carefully cut and laid with chips or broken pieces of stone packing the interstices between them. No mortar or cement is anywhere in the stone work (Marshall 1905-6: 88).

The present extent hereof of this wall, 11-12 ft (3.35-3.65 m) may be traced to the southern extremity of the valley where the rivulet Banganga crosses to the plains. Marshall points out that at this level 'the wall is neatly finished off with a course of small stones' (Marshall 1905-6: 88) and as there is no scatter of fallen stones nearby, he assumes that the wall is 12 ft to be the original height of the wall. Marshall also sug-

gests the existence of some kind of superstructure on top of this but there is no suggestive evidence on this point. Its usual thickness is 17 ft 6 in (5.33 m). There are a number of bastions of which about sixteen have been observed and of which seven are on either side of the Banganga defile. They also occur on either side of the northern opening of the valley. They are each broadly 47 to 60 ft (14.32 to 18.28 m) long and 34 to 46 ft (10.36 to 12.19 m) broad. The defences were further supplemented, probably at a later date, by separate watch towers erected at various prominent places on the hills. Two conspicuous examples of these exist on the Vaibhara hill. Of the main gates in the outer walls traces of only one on the north are visible' (Marshall 1905-6: 89). Access to the top of the wall was obtained through 'stairs or rather ramps built in the thickness of the wall along its inner face' (Marshall 1905-6: 84).

In the valley itself, below the level of the hills, a ridge of earth and stone, about 4½ miles long, encloses the valley on all sides, and is roughly pentagonal in plan. This is known as the inner fortification of Old Rajagriha. This still remains unexcavated and Patil (1963: 439) points out that this might well have been a mere embankment to protect the settlement from rain water coming down from the hills. No systematic excavation directed towards reconstructing its different cultural phases has yet taken place inside the proper settlement of Old Rajagriha.

Individual ruins like the Maniyar math, 'Bimbisara's jail', etc. have been excavated but these monuments are mostly religious in character and do not add up to any pattern of systematic town-planning. Religious monuments of different periods also abound in the slopes and the periphery of the neighbouring Vaibhara and Gridhrakuta hills. The secular aspect of the city core of Old Rajagriha, however, still remains elusive.

Outside the hill-girt valley, in the level plain to the north, New Rajagriha also has two sets of fortifications. The outer fortification is an irregular pentagon in shape with a periphery of about three miles. It is a massive wall of earth and according to the evidence of Francis Buchanan is 'strengthened by a ditch . . . which seems to have been about 160 feet wide' (cited in Patil 1963: 466). This wall is now fast disappearing. In a fairly well-preserved condition is the inner fortification enclosure, the citadel, a roughly rectangular area of about 70-80 acres (28.32-32.37 ha.). The wall is 15-18 ft (4.57-5.48 m) thick and is preserved up to a height of 11 ft (3.35 m). It is faced with unhewn blocks of stone set with any mortar, the filling inside being stone rubble and earth. The mortar used in the pointing of the joints seems to be from a later period.

There were semi-circular bastions set at regular intervals. There are gaps in the wall in the north, east and west but except in the south, there is no positive proof of a gateway, indicated by an 11 ft (3.35 m) wide passage approached by earthen ramps both on the inside and outside, and flanked by a semi-circular bastion on either side.

The proper stratigraphic sequence of the citadel wall was established in 1961-62. The mud rampart wall was built in Period IIA which was a little later than the initial appearance of NBPW at the site. It was 7.31 m high and was retained on the southern side by a brick wall with a height of 2.15 m. The base of the mud rampart was 40.53 m wide but it was somewhat narrower on its northern side. There was also a moat, the width and depth of which remain undetermined. In Period IIB a brick fortification wall was added to the top (IAR 1961-62: 7-8). In the following year it was established that there was an earthwork in the first phase of the NBPW itself. Period II shows a mud rampart whereas a massive stone fortification appears in Period III. Outside the inner wall but within the outer one in this area one notes quite a few religious structures like the 'Venayama', 'Ajatasatru stupa', etc. but the secular aspects of the town-planning are not understood. In 1974-75 (IAR 1974-75) nothing much was found except a broad stratigraphy beginning with the NBPW. There is no doubt that Rajagriha, one of the earliest and most important centres of Indian history, deserves far more systematic modern archaeological attention than it has hitherto received.

Champa

One of the six principal cities of India during the time of the Buddha and who was visited both by him and Mahavira, ancient 'Champa' was identified by Cunningham (1963 rep.: 402-3) with Champagnagar and Champapar, two modern villages near Bhagalpur (Law 1954: 214-15; H. C. Mahabadi 1966: 186-7) in south Bihar. It was connected with Pataliputra, Rajagriha and the early historic settlements of north Bihar on the one hand, and the comparable settlements in the lower Gangetic valley like Patanagar and Tamralipta on the other. It is also supposed to be a centre of maritime trade to southeast Asia. A comprehensive description of the archaeological aspects of ancient Champa 5 km west of Bhagalpur, is being given by B. P. Sinha (in A. Ghosh 1989: 11-90). There is a defensive earthen wall surrounded by a deep moat and the bed of the Ganges. The wall came up in the first phase of the NBPW which was preceded by

a black and-red ware occupation of the site. The first phase of the rampart wall was built of blackish soil with a gentle slope on the outside. In the second phase it was built by the dumping over of yellow and red soil to form a thick wall. This wall was raised against a 3.80 m wide embankment of burnt brick debris which was possibly meant to prevent erosion by water. The maximum height traced is 5.80 m. Further, a high brick wall was raised right over the rampart to strengthen the overall fortification system. This phase has been placed in the Sunga period. Associated with it is a rammed brick floor with six postholes, which may represent the position of a watchman's room on the rampart. B.P. Sinha states that numerous well-built brick houses of the Sunga-Gupta period have been found at the site, along with an 'exceedingly well-built' plastered drain (25 cm wide, 52 cm deep) in the village outside the fortified area.

There is no dearth of early historical sites in the Bhagalpur area. Orup (IAR 1966-67: 6-7), Jhimjhimia Kalisthan near Rajmahal (1987-88: 12-13), etc. The mound of Jhimjhimia Kalisthan is said to include five villages and this must be a very large site.

LOWER GANGETIC VALLEY

(WEST BENGAL AND BANGLADESH)

In the lower Gangetic valley the distribution of early historical sites falls into a number of geographical areas: the old alluvium of the districts of Dinajpur, Rajshahi, Bagura and Maldaha of pre-1947 Bengal, the confluence of an old course of the Brahmaputra with the Meghna in the upland tract near Dhaka, the deltaic region of the districts of 24 Parganas and Midnapur, and the Rarh tract of the districts of Birbhum, Burdwan and Bankura.

Mahasthangarh

Ancient Pundranagara was identified with modern Mahasthan in the Bagura district of Bangladesh by Cunningham (1963: rep. 404-5) and this was afterwards corroborated by the local find of an inscription in Mauryan Brahmī which referred to Pundranagara. On the bank of the river Kadamtoya the ruins at the site comprise a 5000 by 4000 ft (1524 by 1219 m) oblong mound, besides some isolated ones. The area involved is about 185 ha. As Kashinath Dikshit (1929-30: 88) wrote: 'The extent of the ancient city with its suburbs is unequalled by any other ancient site in Bengal . . . and can stand comparison with the ruins of ancient cities in other Gangetic provinces, such as Basarh, Saheth-Maheth and Kausambi'.

As far as the specific excavation results are concerned, structural evidence regarding the early historic levels does not exist except for the occurrence of a mud rampart below the burnt brick Gupta fortification at Mahasthangarh (for a detailed discussion on Mahasthangarh and its neighbouring area, see Chakrabarti 1992).

Bangarh

Modern Bangarh (West Dinajpur) has been identified with ancient Koliavarsa, a place mentioned in some literary and epigraphic sources (IAR 1954: 230, Goswami 1948), all of which suggest that it was the chief town of an administrative centre of the same name. The site is situated on the bank of the Purnabhava and comprises a number of mounds, the chief of which is a citadel (about 1800 by 1500 ft; about 25 ha.) surrounded by a ditch on three sides, namely, north, east and south and by the river on the west. When excavated, this mound revealed five strata or levels of occupation, the earliest two of which could be assigned to the early historic period. The structural evidence of the fifth stratum comprised only a ring-wall while in the succeeding stratum four there were some fragmentary burnt-brick walls, a burnt-brick drain and a cess-pit without any outlet. The finds indicate that this stratum belonged to the second-first centuries BC. The details of excavations of the rampart wall have not been included in the excavation report but according to the excavator the site came to possess by the second-first centuries BC a brick-built rampart wall, which was 10 ft 8 ins (3.25 m) wide. A black-and-red ware sherd has been obtained in a recent investigation of the site (Chakrabarti and Chattopadhyay 1992) and it is thus probable that the antiquity of the site goes back to the black-and-red ware level. This is a hypothesis which may be made about Mahasthangarh as well.

West Bank Lower

This site does not show any visible mound but has yielded thousands of punch-marked coins and semi-precious stone beads. The total area covers a number of modern villages on an old course of the Brahmaputra near its confluence with the Meghna near Narsingdi in modern Bangladesh. There is no doubt that the site represents a major early historic settlement going back to the third century BC. It has been inferred (Chakrabarti 1992) that this site represents a trade centre through which the produce of Assam and the eastern Bengal delta used to meet the commercial traffic with south-east Asia and Rome.

Tamluk

Though the ancient port of Tamralipta or modern Tamluk on the bank of the Rupnarayan river in the Bengal delta figures in many early literary sources (H. Chakrabarti 1966: 146–50, including Ptolemy, who called Tamalites), archaeologically the site has not been given as much attention as it deserves. A limited excavation in 1954–56 showed that over an assemblage of neolithic celts and ill-fired pottery. Period I there was an early historic Period II dated to the third–second centuries AD. Period III was placed in the first two centuries AD. The only structural evidence of these two periods was a brick-built tank and some terracotta ring wells. The succeeding occupation levels continued with interruptions up to the modern period. Though the evidence from excavations is thus limited and was not in any sense implied by a later work at the site, the abundant wealth of antiquities collected from the surface at Tamluk is amply suggestive of the early historic importance of the site.

Chandraketugarh

Chandraketugarh (IAR 1956–57: 29–30, 1957–58: 51–2, 1958–59: 55–6, 1959–60: 39–40, 1960–61: 50–2, 1961–62: 62–3, 1962–63: 46–7, 1963–64: 63–5, 1964–65: 52–3, 1965–66: 59–60, 1966–67: 48) is an extensive site on the bank of a dried up course of the Vidyadhari (24 Parganas district). A rampart wall is clearly visible and the total fortified area should be more than one square mile. The site has yielded an occupation sequence beginning with a pre-NBPW level. This distinctive pottery begins only in Period II. The succeeding two periods are also early historic while Periods V and VI belong to the Gupta and Pala periods respectively. The structural evidence of the first four periods is very limited but there is ample indication of the use of mud, bamboo, and thatch for houses. There are also some terracotta ring wells and drain pipes. The mud-built rampart wall has not as yet been satisfactorily excavated but a limited cutting traces its beginning to about the second century BC. As at Tamluk, there is an extensive collection of early historic antiquities from Chandraketugarh, suggestive of its early importance. The site remains to be positively identified with any ancient city mentioned in Indian literature, but it may be identified with Gange, a place mentioned both by Periplus and Ptolemy.

Mangalkot, Dihar and Pokharna

The ruins of Mangalkot are spread on the bank of the Kanur river near the confluence with the Ajay in Burdwan district over an area of about 100

25–40 ha. There is still no positive evidence that the site was enclosed by a rampart although it is possible that segments of an earthen rampart survive in one or two places. The most prominent mound of the site is known locally as 'Vikramaditya Dhibi' which when excavated, yielded a sequence beginning with black and red ware. Extensive burnt-brick structures have been reported from the Gupta period and earlier. The site is noted for its rich early historic antiquities (for a discussion see Chakrabarti et al. 1993). Dihar lies on the bank of the Dwarakeswar river near modern Bishnupur. The present mound which has shown black and red ware in its earliest phase and an abundance of early historical antiquities including east copper coins later should not measure more than 15–20 acres (c. 8 ha) but it has been said that the mound was originally much more extensive. This may also be said about the extent of Pokharna which lies on the bank of the Damodar in Bankura. The sequence beginning with black and red ware is evident and in the early historic period the place was possibly a major administrative centre of the region. It could have originally comprised an area of 1 km sq.

BRAHMAPUTRA VALLEY (ASSAM)

Literary sources such as the Mahabharata and the Arthashastra unequivocally suggest the significance of the Brahmaputra valley in early historic India. The same and other relevant sources have been discussed among others by P. C. Choudhury (1966), R. D. Choudhury (1985), N. D. Choudhury (1985), N. Lahiri (1991) and M. Momin (1991). In his illustration of pottery types in a surface collection from Dah Parvati, N. D. Choudhury (1985) shows without underlining its special significance, a 'Sung' bowl. It seems that careful work in this region should produce archaeological evidence going back to c. 200 BC, if not earlier. There is in fact no reason why the Brahmaputra valley should not have major settlements at least from this period, especially in view of the fact that there are early settlements both in the Karatoya valley (Mahasthangarh) and in the area of confluence between the Meghna and an old course of the Brahmaputra (Wari-Bateswar).

RAJASTHAN

The primary concentration of early historical sites in Rajasthan is in its relatively fertile part to the east of the Aravallis. In west Rajasthan, where the evidence is limited, the sites are spread only along the course of the Indus. Recent explorations in this area have yielded positive evi-

dence of the occupation of the valley in the early centuries AD when it seems to have provided a direct passage of communication between Sindh and the area around Delhi. The early historical settlements discovered in the valley may be explained in the light of the importance of this passage. One of these settlements, Rangmahal, was excavated by Hanna K. J. (1959) with little specific results except for the identification of a black painted red ceramic belonging to this period. However, Rangmahal sites have been reported as far east as parts of east Rajasthan and Haryana, and it has been reported (A. Ghosh 1989, II: 369) that some Rangmahal sites are quite extensive and a few have mud fortifications. In east Rajasthan where the evidence of early historic occupation is fairly widespread systematic excavations of this level have been generally inadequate. The sites that deserve attention are Bairat, Rairh, Sambhar and Nagar.

Bairat

The total area of the ruins at Bairat or ancient Viratanagara, the capital of the Matsyas (Law 1954: 333–4) is supposed to be more than 2½ miles in circuit (Archaeological Survey of India Report, Cunningham Series, vol. II: 245). D.R. Sahni's excavations (Sahni, undated) were confined to an area 'not more than 400 feet by 190 feet' and yielded 'an unexpectedly rich harvest of archaeological remains of the Maurya period and those immediately succeeding it'. Among the finds may be listed an interesting type of temple, a monastery, fragments of Mauryan pillars and miscellaneous antiquities. The point is that Sahni's work was conducted at a Buddhist establishment outside the fortified city of Viratanagara and modern excavations here (IAR 1962–63: 31) were content with establishing its mere sequence which began with the PGW.

Rairh

The mound at Rairh (1300 ft by 2500 ft/c. 400 by 775 m/c. 35 ha) was excavated by K.N. Puri (undated) and yielded occupational remains ranging from the third–second centuries BC to the second century AD and beyond. A number of soak-wells with terracotta rings and a series of parallel walls with narrow intervals between them seem to have been the only structural evidence discovered during excavations. According to Sahni (undated 3) 'this small town must have been an important centre of Mauryan art and culture'.

Sambhar

The antiquity of Sambhar or ancient Sakambhari (N.L. Dey 1971 rep.: 174) the capital of the Chahamana princes, was pushed back to the early historical period by Sahni's excavations in 1936–38 (Sahni undated). The unearthed structures range in date from the third–second centuries BC to about the tenth century AD, but there is nothing structurally significant about the early remains in the excavation report.

Nagar

Nagar or ancient Madhyamika (Smith 1924: 227–8), the capital of the Satavahana, a place important enough to be invaded by the Indo-Greek king, Menander, and mentioned by the grammarian, Patanjali, has been only briefly excavated (Bhandarkar 1929, IAR 1962–63: 19–20). The site possesses a defence wall built in the early centuries AD (probably in the Gupta period). The beginning of occupation at the site goes back to c. 400 BC.

MAHWA PLATEAU

The geographical nucleus of early urban growth in central India is the Malwa plateau, a rich agricultural territory in itself, with the added advantage of lying on the main communication line between north India on the one hand and the Deccan and west India on the other. The combined evidence of literature and archaeology singles out the following settlements among the rest.

Besnagar

Modern Besnagar or ancient Vidisa (Dey 1971: 35, Law 1954: 336–40, for its economic life, H. Chakraborti 1966: 192–5) was an important centre for a number of reasons. First, it figures as a capital city in three contexts. It was the western capital of the Sunga dynasty under King Phalgunisara and King Agnimitra. Moreover, it has been suggested that it was the capital of east Malwa. It has also been mentioned as the capital of Dasarna country, the Dasarnas being a tribe in the Mahabharata. Its importance has been further emphasized by a stone pillar at the site set up by a certain Heliodorus who was the envoy of the Indo-Greek king Antialcidas of Taxila to the court of King Kasiputra Bhagabhadra

of Vidisa. Secondly, it was an important break-point on the north India-Deccan-west India route. Its economic prosperity may be generally deduced from references to its labourers, bankers and artisan guilds in some dedicatory inscriptions in the stupas of Bharhut and Sanchi. It may also be emphasized that Vidisa seems to have been an important craft centre, particularly noted for ivory, weaving and sharp swords. Finally, on the religious level, Vidisa was, as the Heliodorus pillar testifies, an important early centre of the Bhagavata cult.

The ruins of the site lie primarily in the fork between the converging rivers, Betwa and Bes, but they also extend 'for at least two-thirds of a mile north of the river Bes' (Bhandarkar 1913-14: 186). After a preliminary investigation by Lake in 1910 (cited in *ibid.*) when nothing earlier than the Gupta period was found, the site was excavated by D.R. Bhandarkar. His attempts were primarily confined to the area around the Heliodorus inscription which, he himself admits, 'is, strictly speaking, outside the confines of the old town of Besnagar which . . . are defined by two rivers the Betwa and the Bes'. At this place he discovered some ruins which belonged to a probable Vasudeva temple while his excavations in the heart of the ruins yielded nothing significant except 'the foundations and walls of old brick dwelling houses with brick pavements in front probably belonging to the early centuries AD.

M.D. Khare has supplied further details regarding the site (IAR 1963-64: 16-17, 1964-65: 19-20, 1965-66: 23-4, 1975-76: 30-1, 1976-77: 33-4). In the main six habitational periods have been identified ranging in chronology from the chalcolithic to the post-Gupta period. The early historical period begins in Period II with the NBPW. The most significant structural find in the city area was a massive wall

exposed towards the north and south to a length of 53 m and to an average width of 3.75 m. Originally built of dry rubble masonry, it was provided with passages and drains and was twice rebuilt in brick with supporting buttresses. More than half a dozen large-sized stone balls, recovered from either side of the wall, may have been used perhaps as sling stones may perhaps indicate its function as a defensive wall of a defence wall, besides an enclosure wall of a palace complex (IAR 1964-65: 19-20).

The stratigraphical details of this wall are not published but it is said to belong to the NBPW phase. Terracotta ring-wells have also been reported from this phase. At the site of the Heliodorus pillar a temple was found in two phases (the first phase is said to have come to an end in the third century BC), perhaps the probable Vasudeva temple, was discovered.

Pawaya

Ancient Padmavati has been identified with the modern village of Pawaya in the former state of Gwalior (Smith 1924: 300). The site lies in the fork of the former state of Gwalior, the Sindh and the Parvati, and thus formed by two converging rivers, the Sindh and the Parvati, and thus resembles the site of Vidisa. The total extent of the site has been estimated to be about 4 km. The site has not been excavated but 'the brick remains and fragments of sculptures scattered among them attest to the existence here of an ancient city from at least the first or second century AD down to the late Gupta period' (Garde 1915-16). M.B. Garde also traced the remains of a large and terraced Gupta period temple at the site.

Ujjain

Ancient Ujjayini ranks in importance with Rajagriha, Kausambi, Takshasila and such other cities of ancient India. During the time of the Buddha it was the capital of Avanti, one of the sixteen mahajanapadas whose contemporary reigning king, Pradyota, has been mentioned in early Buddhist sources. The most important point of reference was his relationship with the Gangetic valley princes like Udayana of Kausambi and Brihadrata of Rajagriha. According to one evidence he even waged an unsuccessful war against King Pukkusati of Taxila in the northwest. Subsequently, under the Mauryas, Ujjayini became a viceregal centre. Before his accession to the throne, Asoka, one of whose Minor Rock Edicts refers to Ujjayini served as a viceroy here. After the Mauryas its important political masters were the Satavahanas of the Deccan and the Saka Kshatriyas of western India and finally under Chandragupta II in the fourth century AD it came to acquire a fame for culture and beauty, which is reflected in ancient Indian literature (Law 1944).

The economic and commercial significance of Ujjayini must have to a great extent been responsible for its political and cultural pre-eminence. It was the point from the Gangetic valley bifurcated here for the Deccan and the north. Ujjain gathered up and forwarded the trade between the NW India, the Ganges valley, the southern and western India' (H. C. Chhabra 1966: 195).

Modern Ujjain or the site of ancient Ujjayini stands on the bank of the Sindh, a tributary of the Chambal. The site came to be briefly excavated in 1910 when the remains of a wooden structure, terracotta ring-wells and other numerous early historic antiquities were discovered (cited in

Ancient India 9: 160). In 1955–58 (IAR 1955: 56–19, 1956–57: 26–8, 1957–58: 33–6, also Banerjee 1965: 14–15) it was more fully excavated and revealed something of a coherent town-plan and a dependable archaeological sequence.

There are four main cultural periods. Period I yields a black-and-red ware and has been dated 700–500 BC. It antedates the NBPW at the site. This appears in Period II while Period III falls between the Sungas in the second century BC to the Paramaras in the ninth-tenth centuries AD. Period IV is medieval.

The plan of the site shows an irregular oblong measuring 1 by 3/4 mile and surrounded by a rampart which shows eight openings, presumably at gateways. The river flanks the site almost immediately on the west and distantly on the northern side. On two of the other sides—east and south—there was a moat. The rampart which was made of heaped up clay and battered both inside and outside was built in Period I and lasted up to the end of Period III. In Period I it was 245 ft broad at the base and 132 ft wide at the top. A couple of bamboo baskets and some iron implements including a spade—suggestive of the tools of construction—have been found in the body of the rampart. The rampart was strengthened on the river side (i.e. on the west side) in Period I itself

by the placement of well-cut wooden sleepers or beams in a connected manner for a stretch of nearly 350 ft along side the river, corresponding in length to an inward bend in the stream. This feature was observed along the northern half of the western face of the ramparts. The sleepers were placed angular to the flow of the river so as to serve as a buffer to break the force of striking waves. The sleepers were laid, as seen in the trenches, surk carefully in several courses to form a series of deep, rectangular chambers, intended apparently to hold the dumped clay in position and prevent it from being scoured away (Banerjee 1965: 16).

The wood used for the sleepers has been identified as teak (*Tectona grandis*) and Saled khair (*Acacia feruginea*). The logs vary in length, from 13 to 18 ft (3.96 to 5.48 m) and have a 9 ins (0.22 m) square cross-section. In Period II the outer edge of the rampart was reinforced by a 3 ft 9 ins (1.143 m) wide brick wall. The width of the moat was reduced to 20 ft (39.31 m) in Period III.

Inside the fortified habitation area no structural evidence was found for Period I. In Period II the houses were made

variously of mud, mud-bricks, stone rubble or burnt bricks. The mud and mud-brick structures were usually built over a plinth of rubble and clay. The floor too lay on a bed of rubble and was made either of clay, occasionally of

mud bricks or brick-dust. The mortar and plaster, where available, were of a smooth paste of clay. The floors were renewed or raised periodically with clay. The houses appeared to have been roofed generally with oblong tiles with double perforations for being fixed in position (IAR 1956–57: 24).

A burnt brick oblong enclosure (34 by 26 ft or 10.36 by 7.92 m) with a few parapet wall, which has been excavated might have served as a reservoir. A large number of finished and unfinished products inside a mud house suggest that this was a 'workshop for the manufacture of beads of agate and arrowheads and knitting needles of bone' (IAR 1956–57: 28). The building tradition of Period II continued in Period III while terracotta ringed soak-pits, ring-wells, bottomless soakage jars and terracotta drain pipes have been found in both periods.

Mulhar

This site in Bilaspur district is supposed to have been a 'flourishing township on the ancient route from Kausambi to the southeastern coast' (IAR 1974–75: 21). Excavations here (IAR 1974–75: 21–2, 1975–76: 23, 1977–78: 30–1) have revealed a sequence beginning with a level bearing punch marked coins. In the first phase of Period I locally available stone blocks were used as housing material whereas in its second phase burnt bricks were used. An enclosing mud wall has been reported in this period. Excavations in one trench showed three structural phases belonging to the Gupta and later times.

The first structure consisted of small rooms with plinths of slate stones. The second structure with fairly large rooms and a courtyard on the eastern side, having plinths and has the plinth of dressed massive limestone blocks over which the superstructure of baked bricks was standing. Below these structures was encountered three successive floor levels, made of rammed earth and plinths. The earliest one resting over the burnt layer. A thick wall of massive stone was found in the lowest level of the trench (IAR 1977–78: 31).

Another trench revealed structural activities of the Satavahana and Gupta periods. Among the finds are a stone wall enclosing the plinths of the complex, an earlier house made of slate stone, etc.

Other Sites

There are also a few other excavated city sites in Madhya Pradesh, not mentioned in IAR 1980–81: 37–8, 1981–82: 36–7, 1982–83: 40), Tumain (IAR 1971–72: 27–8, 1972–73: 15–16), Tripuri

(IAR 1965-66: 21-2, 1966-67: 17-19, 1967-68: 23-4, 1968-69: 11-2, and Maheshwar which lies on the northern bank of the Narmada opposite Navdatoli. Maheshwar has been identified with ancient Mahismati. Regrettably, the details of urban planning from these excavated sites have not been reported, although there are early historic levels at all these sites which are given urban status in literary sources.

GUJARAT

The archaeological horizon marking the beginning of the early historic period in Gujarat seems to be characterized by a black-and-red ware which co-occurs with the late phase of the NBPW. At Broach for instance, the NBPW occurs in the upper levels of the black-and-red-ware bearing horizon (IAR 1956-57: 24), an evidence which is more or less repeated at some other sites like Nagal (IAR 1959-60: 19), Prabhas Patan (IAR 1961-62: 11-12), Amreli, etc. One may reasonably presume that the NBPW was introduced in Gujarat when it came within the Mauryan empire either under Chandragupta or Bindusara. In any case the date should be around the very beginning of the third century BC or earlier. With its inclusion in the Mauryan empire, however, Gujarat finds a place in Indian history and from then, particularly with the development of India's Mediterranean trade, the Gujarat coast-line attained a new level of economic prosperity which must have been the most important single factor in the growth of its early historic urbanism.

Considered in detail, however, the archaeological evidence of early historic urban development in Gujarat is still very scanty. Almost all the excavations at this level have been exclusively vertical in nature, revealing hardly anything beyond the archaeological sequence.

Broach

The most important early historic city in Gujarat was ancient Bharukachchha or Bhrigukachchha of the Indian and Barygaza of the classical sources. Identified with modern Broach on the Narmada estuary, this was a port town par excellence. Not only was its immediate hinterland fertile, yielding wheat, rice and cotton, but its connection stretched to Ujjayini, Malwa and Pratisthana in the Deccan, thus touching the arterial routes of traffic in inner India. Evidence contained in Periplus is most explicit, one of its sections being devoted to an elaborate list of its imports and exports of this port (Majumdar 1960: 304). It did, indeed, have

connections only to the Mediterranean trade; in some Jatakas it is said to have had connections also with Ceylon and southeast Asia (H. Chakrabarti 1966: 92), a likely enough phenomenon considering the importance of the Gujarat coast in India's southeast Asian trade over a long period of time.

The excavations at Broach in 1959-60 have yielded extremely limited data. As the excavator puts it:

The site, situated on the bank of the Narmada, though extensive and compact, is almost completely sealed for examination by the busy town thriving on it, leaving only the eroded peripheral fringes on the riverside at the eastern and western limits available for excavation (IAR 1959-60: 19).

Of the 25 ft thick cultural deposit, Period I was marked by a black-and-red ware bearing the NBPW in its upper levels. An important feature of this period was a mud rampart with a deep moat on the outer side. No structural evidence was found but there was a cluster of five terracotta figurines on the inner fringe of the rampart. Another important aspect was the presence of a large number of finished and unfinished beads of semi-precious stones, suggesting a bead industry. The beginning of this period has been tentatively dated by the excavator to the third century BC, considering the introduction of the NBPW at the site presumably at the very beginning of the third century BC or earlier, the initial date of the period likely to be earlier.

Period II continued till the early centuries AD, as evident from the presence of red polished ware. During this period the mud rampart was replaced with heavy brick revetments which subsequently collapsed. Period III was medieval.

The archaeological data from the other relevant sites in Gujarat are extremely scanty; even at Dwaraka, an important place in the Krishna tradition, what has been obtained is a mere vertical sequence (Ansari and Majumdar 1961: 10). Only at Samalpur (IAR 1961-62: 13-14, R. N. Mehta and Chakrabarti 1967: 10) in the Saurashtra area of northeastern Gujarat has a clearly historic town planning been found. The site position of a black-bault fortification measuring 67.5 by 34.80 m. has been revealed in places intact up to a height of 7 m. from the ground level. In Subbarao's limited excavation in 1961-62, the site was found to have possessed four main periods. Period I was pre-Christian, Period II beginning of the Christian era, Period III with two

phases in the construction of the defence fortifications was dated AD 100-500, the first phase being in AD 100-300. Periods III and IV ranged from the post-Gupta to the medieval period. The picture is not much clearer at such sites as Pandawala (Kushan period settlement, IAR 1982: 33-99), Timbarva (R N Mehta 1955), Vadodara (ancient Vadapaṭaka, cf A Ghosh 1989, II: 457—a large burnt brick structure, Roman bronze early Kshatrapa coins) and Karvan (IAR 1974-75: 15-16, 1975-76: 15-1976-77: 18, 1977-78: 22-3), etc.

MAHARASHTRA

The beginning of the early historic period at Nasik (Period IIA) has been dated around 400 BC (Sankalia and Deo 1955: 20) and this may well be the date of the beginning of the early historic period in the upper Godavari region and Vidarbha. On the basis of evidence contained in the *Suttanipata*, one of the oldest surviving works of the Pali Buddhist canon, the twilight phase may certainly be pushed back to an earlier date. This text refers to the southern trade route linking the Gangetic valley with the Deccan and also to a sage called Bavari who sent his pupils from the Deccan to the Buddha to ask him questions and who became a Buddhist convert in the end (Malalasekera 1960, II: 279-80). On this basis, the Deccan found a place in history in the second half of the sixth century BC. Moreover, the discovery and excavation of a Bharhut-type stupa at Patni in the Wainganga valley in Vidarbha, which is said to possess a pre-Mauryan core, amply suggests that historical centres in Maharashtra were being developed in the fourth century BC, particularly along the route which connected it with the Gangetic valley. The region gained historical importance in the orbit of history in the second century BC. Not merely did it witness the growth of a political power under the Satavahanas but there were also in about this period Buddhist rock-cut caves like Karle, Bhaja, Kanheri, Pitalkhora, etc., which stood along the Deccanese trade routes and which indicate through their inscriptional details the existence of a well-organized economic structure. This economic base was further strengthened in the early centuries AD by the demands of Indo-Roman trade. Ports like Surparaka and Kalyana came to flourish along the coast while in the interior there were distributing centres like Pratistha and Tagara, all mentioned in Ptolemy (for a comprehensive discussion see H Chakrabarti 1966: 101-9, 192-203).

The archaeological data regarding these settlements are hopelessly inadequate. Excavations of the early historic levels at sites like Nasik

Brahmapuri, Ter, Nevasa, Kaundanpur, etc. have merely bracketed the stratigraphic position of these levels.

A place mentioned by Patanjali and called 'nagara' or city in an early epigraphic inscription (Sankalia and Deo 1955: 1), Nasik Period II, which appears in early history, possesses two sub-periods, A, dated c. 400-200 BC, and B, dated c. 200 BC-AD 50. The few houses which were excavated were mud-walled and there were soakage pits lined with bricks or terracotta rings. Period III is dated c. AD 50-200 and possessed burnt brick houses.

The beginning of Brahmapuri (Sankalia and Dikshit 1952) on the Panchaganga river may go back to c. 200 BC but the settlement seemed to have been prosperous only in the early centuries AD. Four burnt brick houses of this period have been excavated. They were built on a foundation of large pebbles embedded in layers of clay, roofed with tiles, and had at least three rooms each, some of them big in size. A room measures 32 ft by 6 ft in House IV. The passages between these houses were irregularly aligned and were narrow, about 2 ft wide.

The inland market town of Tagara (H Chakrabarti 1966: 202-3, for different theories of identification) is generally identified with modern Ter in the river Terna. Although excavated over a number of seasons earlier (IAR 1957-58: 23-4, 1966-67: 25-6, 1967-68: 35, 1968-69: 17-18), the site was re-excavated by S B Deo in 1974-75 (IAR 1974-75: 32) and is divided into three cultural phases. Phase I is marked by the NBPW. Phase II shows 'some sort of wooden barricade with teak plants fixed in position with wooden pins'. The structures of Phase III (Satavahana coins) were constructed of baked bricks with floors of hydraulic lime mortar, tiled roofs and detached soakage wells of terracotta rings. The habitation at Ter ended around the third century AD. An extensive excavation was reported as 'probably the most intact and most extensive one with Satavahana habitation deposit' was found at Ter, located at east of Ter in Osmanabad district. In 1987-88 the excavations at Ter revealed some religious structures including a tank of the third century AD (IAR 1987-88: 87-8).

Kaundanpur (Dikshit 1968) on the bank of the Wainganga or ancient Wainganga was the traditional capital of Vidarbha (Deo 1971: 168). Excavations revealed only a sequence from the megalithic to the early historic period in the following levels: Period II (pre-Mauryan), Period III (3rd-1st BC), Period IV (c. 150 BC-AD 200) and Period V (c. 200-250 AD). Brick-lined soakage wells were found in Period IV. Structures made of mud were made in Periods IV and V of Nevasa on the

Pravara; these periods dated c. 150 BC–50 BC and c. 50 BC–AD 200, respectively. There has been no excavation at Sopara and Kalyan, both sea-ports of undoubted significance near Bombay. Pratisthana on the Godavari, perhaps the most important early historical inland settlement in the Deccan with a very wide trade network extending into the Gangetic valley, has neither been properly surveyed nor excavated (IAR 1965: 44–28–9). The sequence is said to begin with the NBPW mixed with Satavahana coins. The site is said to measure 4 sq. km in extent (A. Chatterjee 1989, II: 325). Excavations at Bhokardan (Deo and Gupta 1974) or ancient Bhogavardhana in the Amaravati district did not yield much data of structural significance. Another site, Bhatkuli, which has been mentioned in the Bharhut inscriptions as Bhojakakata, is reported in the same district. Another major site is Adam (IAR 1987–88: 85, also, A. N. Das 1991) in Nagpur district which has shown the remains of an earthen rampart with gateways on the eastern flank. The site is said to measure 10 ha. The rampart and the moat came up in Period III, dated between c. 1000 and 500 BC and was later reinforced by a stone battlement. Arni in Yeotmal district (IAR 1984–85) shows a mud rampart wall with a stone foundation of the Satavahana period. Arni is unexcavated but Nadner, a fortified settlement in Sehore district, was excavated for two seasons (IAR 1986–87: 58, 1987–88: 80–1), although nothing can be gathered about the nature of the rampart and the moat from the published material. This site has been described as a 'flourishing trade centre of the Avant kingdom'.

KARNATAKA

Evidence of early history has been obtained from a few places in Karnataka or Mysore. The Mauryan presence is an indisputable historical thread. The township of Isila mentioned in an Asokan minor rock edict at Brahmagiri is supposed to have been a provincial administrative centre of the Mauryas. There is no reason why the location of such a centre should be on the border of the empire; I suspect that Mauryan control extended much further south. There is no special reason to believe that it has been the case so far, that the 'bordering' states of the Cholas, Keralas, Satyaputras, were outside the Mauryan border and not inside. These groups of people may, with perhaps more justification, be identified as the people constituting the inhabitants of the southern outlying (border or, if one prefers) section of the Mauryan empire. There is really no reason why Isila should be placed on the border itself. Whatever it was, we

know anything about Isila of the third century BC. In the Andhra level, however, there is evidence of a 'road of stone rubble, 17–18 feet wide'. Chandravada, some miles southwest of Brahmagiri, was another town of the early centuries AD. The details are not known but the ground survey indicates that it was some 800 yards long with about the same width. The finds of Roman coins indicate that Mysore had its share of Indo-Roman trade. There is reference to a port called Byzantium both in Ptolemy and Ptolemy, identified with modern Vizadrog or Vijayanti mentioned in a Karle inscription which refers to a banker of the place (H. C. Craddock 1966: 109–11). The place has revealed occupation going back to the third century BC and at a site called Udayvara near modern Udy, there is evidence of an early historic fortification (IAR 1968–69). At Banavasi (North Kanara district) the mound (over 1 sq. km in extent) enclosed by a fortification which is made of bricks set on a rubble foundation. This is surrounded by a deep moat (except on the river side) and underwent repairs at least twice with brickbats and large lateritic blocks. This rampart dates from the first century AD. Religious structures have also been reported from the place. Vadgaon-Madhavpur (A. Ghosh 1989: II: 456) in Belgaum district is a very large early historic site (40 ha.) which was excavated in 1972–77. This has yielded a sequence beginning with the third century BC. Brick structures have been reported from Period III, dated from the middle of the first to the second century AD. On the left bank of the Bhima, and on one of its inward bends, Sannati (Sundara 1988) is a single culture site of the early historical period and is roughly 100 ha. in extent. There is a brick fortification wall, 4 m wide and 2–3 m high. The site has been reported to possess two parts, one on the river bank (80 ha.) and the other on a lower level. About 3 km away there are two stupa sites dating from the second century BC to the second century AD. According to A. Sundara no other site is so rich in Buddhist remains in Karnataka.

KERALA

The coastal strip of Kerala, a focal point of India's sea-borne trade for the last two centuries, has not yet reported a single authenticated early historic site. Considering that the Asokan rock edicts II and XIII refer to the 'Satyaputras' and that the region was of historic importance in the early centuries of the early centuries AD, this lack of early historic sites is a pity. It may be explained by the lack of adequate exploration, the lack of the version which the coastal stations were presumably

situated and the yearly two seasons of monsoon acting against the formation of a suitable habitational deposit.

Armed with an effective knowledge of the monsoons Roman trade from the Red Sea area converged directly on the Kerala coast before proceeding further to the east. In Periplus, Ptolemy and Pliny a number of trading stations have been mentioned, the most important of which seems to be Musiris, generally identified with modern Cranganore.

The Peutinger Tablet, a cartographic representation of the ancient world dating from the third century AD shows an Augustan temple on the map beside Musiris. Thus, a careful archaeological search for early historic sites is of importance in Kerala.

TAMILNADU

It is difficult to pinpoint the precise beginning of history in the former province of Madras or modern Tamilnadu. The earliest fixed point is the Asokan rock edicts II and XIII which refer to the kingdom or the people of the Cholas and Pandyas, the former extending along the eastern coast from Nellore to Pudukottai and the latter centred around Madras and stretching to the southern tip of the peninsula. Besides, the earliest known Tamil literature refers explicitly to these two kingdoms. There is a reference to the Pandyas in the works of the Sanskrit grammarian, Kaivayana who is likely to belong to the fourth century BC, and at about the same time Megasthenes speaks of Pandya, the daughter of Heracles ruling the portion of India which lies to the south and extends to the sea. In Strabo King Pandion is said to have sent a mission to Augustus Caesar in 20 BC (for a discussion see Smith 1924: 47-51; K. A. N. Sastri 1958: chapters IV and V). There is little doubt that there were two well organized kingdoms in the Coromandel coast dating at least from the post-Mauryan period, not earlier. Their twilight period, however, lasts up to the beginning of the Christian era when both Tamil literature and the classical sources speak of a concentration of sea-borne trade in the region. It is a transitional period that archaeological evidence becomes historically revealing.

Compared to the archaeological potentiality of the region, however, the excavated sites are still limited in number. Uravur, Arkathur, Kanchipuram and Kaveripattinam, all in the Chola country. The Pandya centres like Madura and Korkai remain largely unexcavated. Madura, the Pandyan capital in the early centuries AD, possesses graphic Tamil inscriptions and some classical references (H. Chakrabarti 1966: 20-11). Korkai, identified with a village on the bank of the Tamraparni, was the earlier capital.

Briefly excavated, Korkai has yielded in its early historic level a brick platform and a terracotta sootage jar. The discovery of innumerable pearl shells at different levels indicates that the site was an important centre of pearl fishery (IAR 1968-69). Three periods of the ancient Chola capital have been identified (IAR 1964-65) now within the city limits of modern Trichirapalli or Trichinopoly. Period I, dated between the third century BC and the first-second centuries AD, is marked by the primary use of megalithic black and red russet coated, rouletted and Arretine wares, the last two being of Roman affiliation. A few potsherds bear Tamil inscriptions in the Brahmi script of the first-second centuries AD. Period II, dated between the second and fifth-sixth centuries AD, witnessed a decline in the use of the megalithic black-and-red ware. A small burnt brick structure with two adjoining cisterns, which belong to this period might have had some industrial use, perhaps as dyeing vats. Period III begins about the sixth century AD (for almost similar evidence from Tirukkampuliyar and Alagarai, see Mahalingam 1970).

Excavations in 1945 at Arikamedu (Wheeler 1946), a small fishermen's village on the bank of a lagoon about two miles south of the centre of modern Pondicherry, produced the first securely dated stratigraphic evidence of the presence of Romans in the south and gave in the process to South Indian archaeology its first secure chronological datum-line. However, from the point of view of urban planning the results have been disappointing. Even the 1947-48 excavations by Casal did not enlarge the picture to great extent.

The chronology of early Arikamedu broadly spans the first two centuries AD, although recent opinions favour a beginning about one or two centuries earlier. In the northern sector of the excavated area, 'on the edge of the estuary', there was a large brick-structure, more than 50 ft long, which is supposed to have been a warehouse. This building dated approximately to the middle and second half of the first century AD. In the southern sector two complexes of pavements called Tanks A and B lay at the edge of two large and apparently unroofed cisterns and were associated with extensive drains or conduits. The general impression is that 'the site was used for industrial purposes involving a constant inflow and outflow of water. It is likely enough, though not proved, that the tanks were used as cisterns or vats for dyeing cotton which formed one of the most important exports of this part of the ancient times. The yards may have been used for drying this material' (Wheeler 1946). In 1947-48 a sloped brick revetment with a surface of 6 ft was traced for about 80 yards in the southern sector. It was imagined to be the side of a reservoir, but might well be a

defensive revetment. The presence of Arretine ware, Roman gems, lamp, amphorae fragments and glass bowls amply indicates that this was one of the Roman emporia, perhaps the Pouduke emporium mentioned by Ptolemy.

The excavated data at Kaveripattinam are also meagre (A. Ghose 1981: II, 216); there excavations revealed a massive brick platform (18.28 m x 7.62 m) built on natural sand and perhaps a wharf where boats could be tied. There is a radiocarbon date of the third century BC for this structure. Another major structure, although in a different excavated locality, is a water reservoir made of an earthen band with a brick facade. It is designed with curves to receive the water and let it into a pond. Probably a sluice channel from the river Kaveri at whose mouth the site is located or one of its offshoots served as the feeding channel of this reservoir. The third major excavated structural complex here represents an entire wing of seven rooms (each 2.4 m sq.) of a Buddhist monastery which had an ornamental structure (a *mandapa*?) nearby. The walls of this structure were found decorated with stucco figures and paintings, one of the former being found in the excavations.

At Kanchipuram (IAR 1962-63, 1969-70, 1970-71, 1971-72, 1972-73, 1973-74, 1974-75, 1975-76) the sequence began with the megalithic black-and-red ware but witnessed the introduction of Roman amphorae and rouletted ware at a later level.

Karakadu (IAR 1966-67: 21) in South Arcot district is reported to have been a trading station.

ANDHRA

In the Krishna-Godavari delta and its adjacent uplands the twilight period of history decidedly begins in the third-second centuries BC. The evidence in this region not merely a number of Asokan inscriptions but also the pre-Christian sculptural reliefs at Amaravati, Goli and Jaggayyapeta are testifying to the contemporary art-flourish of the Gangavati-Peavandera region in India. In the early centuries AD this region came into sharp focus in history. In about this period it witnessed a political consolidation successively under the Satavahanas and Ikshvakus and acquired a significant share in India's contemporary Roman and South-east Asian trade.

One of the results of this political consolidation and the prosperity resulting from trade was the growth of a large number of fortified complexes which were mostly Buddhist in character. The discoveries in the Krishna-Godavari delta stretch between Ganjam and Nellore and in the adjacent uplands they reach as far as Srisailem and Warangal.

It is clear that there were five main routes leading to and from the Andhra region: the routes to Kalinga, the South, Karnataka, Maharashtra and Kerala. The fact that the religious settlements were closely linked with the development of trade is suggested by their distribution mainly along these trade routes.

Nagarjunakonda

Of all these sites the one most extensively excavated is Nagarjunakonda, the capital of the Ikshvakus, modern Nagarjunakonda or ancient Vijayapuri. It was excavated in 1926-31, 1938 and 1954-60. The historical sections of the 1954-60 excavations have only been briefly published while the results of the two earlier excavations have been embodied in two *Archaeological Survey of India Memoirs* (Longhurst 1938, Ramachandran 1953).

The site lies in a valley which is about 3 miles wide and almost completely enclosed by some off-shoots of the Nallamalai range on all sides except the west where the Krishna serves both as a barrier and a river passage. Two hill knots are centred in the valley itself: Nagarjuna and Peddakundelagutta hills. A rubble fortification has been explored at the eastern entrance to the valley while another fortification of the same kind has been noticed along the summit of the Siddhaldari hills.

A citadel known as the Ikshaku citadel lay close to the river-bank and on the summit of the Peddakundelagutta hill. It enclosed a roughly rectangular area, about 3000 by 2000 ft (914.4 by 609.6 m) and was surrounded by a fortification wall which revealed two building phases. In Phase I it was mud-built, was about 80 ft (24.38 m) wide at the base and built on the natural soil except for the river-side where it overlay a pre-Ikshaku occupational deposit. In Phase II there was a 9-14 ft (2.74-4.27 m) wide burnt brick wall built over at places over the remains of the Phase I wall. Except the portion overlying the Peddakundelagutta hill, this citadel was surrounded by a ditch 12 ft (3.65 m) deep and 74-122 ft (22.55-36.23 m) wide. There were two main gateways, one each on the north and the west, while a narrow postern gate has been traced on the east side. Outside the western gate which had a minimum width of 5.18 m there was a brick-wall 6-7 ft (1.82-2.13 m) high and 6-12 m wide, suggesting an outwork or barbican. The sequence from the pre- to post-rampart layers was uniform and continued into the Ikshaku period.

Within the eastern gateway have been discovered some barracks and a large hall, the expression of Ikshaku architecture. Near the western gateway

a compound wall enclosed some ritualistic structures. The central feature was a four-tiered tank, 27 ft (8.22 m) square at the top and 6.4 ft (1.93 m) square at the bottom. At each level it had short steps on its side. The total depth of the tank was about 6-8 ft (2.59 m). At a height of about 7 ft (2.13 m) there was a drain connected successively with a closed passage and a narrow slab-covered drain. Bones, possibly of a horse and a goat have been found outside the tank but within the outer enclosure. The tank has been supposed to represent an 'Asvamedha' tank. Another two-tiered small tank, built of carved bricks and roughly tortoise in shape lay to the south of the Asvamedha tank and is also supposed to represent a water-reservoir of ritualistic significance. East of this complex a number of residential structures lying within an enclosure wall may represent the palace area.

Sites have been excavated almost all over the valley outside the Ikshaku citadel. But as the detailed plan of the site remains unpublished it is still not possible to evaluate their significance in terms of the layout of the city. Certain sectors, however, seem to stand out from the rest.

The ordinary residential area was concentrated to the east of the citadel. The respective width of the streets, lanes and alleys was 25 ft (7.62 m), 15 ft (4.57 m) and 8 ft (2.43 m). A main street divided the area into two parts. The largest of the houses measured 250 by 200 ft (77 by 60.66 m). Large storage jars arranged in rows seem to have been a characteristic feature of the houses. One particular house has been identified as a goldsmith's shop because of its 'terracotta crucibles, a touch-stone, an iron-pestle, terracotta and stone weights, terracotta bangles, ear-rings and oblong moulds with designs for ornaments'.

An important structural complex in this context is what is believed to be a stadium. It consisted of a central arena, 309 ft (94.18 m) long, 254 ft (78.95 m) wide and 15 ft (4.57 m) deep. It was enclosed on all sides by a flight of steps 2 ft wide and had a pavilion to the west. In front of the topmost steps, there was a platform all around, the width of which as noted on the southern side was 11 feet. On this side six staircases placed at regular intervals, each measuring 6 feet (1.82 m) in width connected the arena with the platform. The pavilion had three phases of varying width and in the last phase had an enclosure wall with an entrance on the western side. Rainwater was drained out of the arena by a drain passing through the northern wall of the stadium.

The structural complexes on the river-side included a stepped ground, a stepped and balustrated ghat on the river and some temples, the most important of which was a Kartikeya temple. Another temple

Kaveri temple, lay to the southeast of the citadel. Mention should also be made of a canal, 30 ft (9.14 m) wide and 6 ft (1.82 m) deep, running east-west belonging to the Ikshaku period. With ramps on both sides the canal bed was traced to a length of 1000 ft (304.8 m). On the southern side of the canal were two mandapas, one a chatuhsala and the other a sixteen pillared hall.

The bulk of the excavated structural data is, however, confined to the Buddhist monastic complexes with their stupas, Charyas and Viharas. When these data are fully published they are likely to shed light on the condition of Buddhism in the early centuries AD in this part of India.

A fuller appreciation of Nagarjunakonda must await the detailed publication of the historical section of the 1954-60 excavation reports but whatever little has been published amply suggests that here was a settlement the magnificence of which is all too rare in Indian archaeology.

H. Sankar and A. Ghosh (1989, II: 299-303) adds the following details. Structures inside the royal citadel included residential buildings, barracks, stables, cisterns, baths, square wells or soak pits. The palace has not been identified except for a bathing establishment attached to it. Two monumental tanks connected with underground drains, wells and paved streets formed the core of this establishment. Outside the citadel, the rooms arranged in one alignment with a common veranda in front were generally built of rubble set in mud. Some of these houses were shops or goldsmith's shops. Brick-built houses followed the same pattern but in the more spacious richer houses, rooms were arranged around a central pillared hall.

There is no doubt that the settlements followed a linear pattern and that they came along broad roads intercepted by cross-roads and bylanes. Some of the roads came up along the bank of a canal with rubble-built ramps on the river side. A very feature of the Ikshvaku township planning was the provision of granaries in the form of pillared halls and pavilions. There were about 8 Brahmanical temples situated mostly along the river bank. The Krishna temple, around the citadel, the Bathing Ghat, the Kartikeya temple was a wonder of Ikshvaku architecture. More than 100 Buddhist stupas were exposed. These monasteries were situated along the river valley except the river bank.

The occupational period of the site of Satanikota (Kurnool district) on the right bank of the Tungabhadra spanned the mid-first century BC to the mid-third century AD. A rampart, a moat and a gate were

found in the first structural phase of the period. The fort followed the natural contour lines of the area and was thus irregular in shape. The main wall was built of stone slabs of irregular sizes (mud mortar) and was 3.2 m wide with 10–13 courses extant. It had a 1.45 m wide facing of burnt brick. On the inner side along the main wall there was a 3 m wide pavement of burnt brickbats. A moat was cut into the natural bedrock as indicated by extensive chisel marks on the sides. The average depth and width of the moat were 3.20 m and 4.25 m, respectively, with embankments of boulders and Cuddapah slabs on the outer edge of the moat. The gateway complex facing the south showed a flight of five steps of 3 m width and was flanked by 45 cm wide parapet walls. There are indications of a drawbridge over the moat. Structural complexes with rectangular rooms have been found well inside the fort (N.C. Ghosh 1986).

Vengi

Ancient Vengi, called Peddavegi (West Godavari district), was the capital of the Salankayanas who have been mentioned by Panini. The excavated areas showed three phases: c. fourth–fifth century AD, mid-fifth–end sixth century AD and end sixth–early seventh century AD. Religious structures have been excavated (I.K. Sarma 1988) but there are extensive ruins including a fortified township covering about 6 sq. km. The gravel fortifications called Kotadibbalu (with a moat) encircle an area of one sq. km.

There are a few other interesting early historic sites: Chinnabandur (5 ha. in Karimnagar district); Dhulikatta (18 ha., mud fortification in Karimnagar); Karnamandi (20 ha.) and Peddabandur (Karimnagar). At Dhulikatta there are two huge brick-built gateways and a deep moat. Kotalinga on the Godavari is surrounded by small early historic sites, one of them being Vennuru, a site of 3/4 ha. It may be noted that except for Karnamandi which is in Adilabad district, most of the sites are in Karimnagar (for details, see V.V. Krishnasastri 1983, Parasher 1992).

Other Andhra Sites

A.H. Longhurst (1983) reports a town-site near the Buddhist stupas at Amaravati and it has been generally accepted as the site of ancient Dhanyakakāra, an important trade mart with references in *Amaravati* and *Kārie* inscriptions (Kosambi 1955).

It was surrounded on all four sides by a massive embankment of earth and broken brick and stones, about 650 yards on each side, the west side only being a little shorter and irregular owing to a curve in the river-bank. This embankment marks the site of the ancient walls of what must have been the citadel of a city and a place of very considerable strength in early times. A large town undoubtedly surrounded the citadel (Longhurst 1983: 13). Recent excavations (IAR 1962–63, 63–4, 64–5) have confirmed six occupational periods at the site, the earliest one going back to the second century BC. On numismatic and palaeogeographical grounds Period VI has been dated to the second–third centuries AD. Structurally nothing significant has been found except the traces of an Amaravati type stupa in Period VI but the red-glazed and Arretine wares occurred in Period III. There were also soak pits and drains in this period. Period II revealed 'a goldsmith's shop and glass bangles and ear-rings of bewildering variety and shape, undoubtedly imported through oceanic and riverine trade' (IAR 1964–65).

A cutting laid across the western side of the fortified township revealed seven structural phases, of which the earlier six related to the embankment-cum-wharf forming a navigation-channel, and the latest one to the defence-system. The structural details of each phase were as follows. Phase I, navigation channel cutting into the natural laterite ridge which also showed occupational deposits in the shape of a series of hearths with ash, etc. Phase II, a huge wharf raised upon wooden posts as indicated by rows of post-holes. Phase III, brick wharf built along the inner side of the channel with further heightening of the embankment by a mud ramp. Phase IV, brick revetment on both sides of the channel with mud and gravel as the packing material. Phase V, reinforcement of the inner side of the channel with further raising of the embankment by the use of sand and sandstone chips and the provision of retaining walls of laterite blocks. Phase VI, repairs to the brick revetment and sand fillings of the earlier phases resulting from heavy erosions; and Phase VII, following a period of abandonment, filling in of the channel and corners of the embankment and defence wall (IAR 1962–63: 12).

Excavations at Yeleswaram (A.W. Khan 1962) have also revealed an Amaravati-type occupational deposit. The remains are mostly of Buddhist monuments.

At Kandapur (Yazdani 1941) the excavated assemblage belongs primarily to the early centuries AD. The rooms were either 10–12 ft square or rectangular, measuring 10 by 8 ft. The floors were occasionally brick-paved but in some cases they were made of well-paved brick-dust or rubble. The roof was made of mud and was used as roofing material. The site was, in fact, briefly occupied and though a number of interesting antiquities were found, including a gold coin of Augustus, no precise plan of the settlement could be made (IAR 1941: 12).

ORISSA

Regarding the early settlements in Orissa where the Asokan inscriptions at Dhauli and Jaugada provide a firm datum line for the beginning of history, not much is known from the literary and epigraphic sources. The Asokan edicts refer to two Mauryan administrative centres, Tosali and Samapa, none of them identified beyond doubt, except possibly modern Sisupalgarh and Jaugada. Ptolemy refers to a place called 'Pakoura' or 'Pakoura, a town' (Majumdar 1960: 367), generally taken to be the Pradyotian form of Dantapura, supposedly an ancient capital of Orissa or Kalinga (H. Chakrabarti 1966: 143-5). Its identification also remains uncertain.

Archaeologically, only two early historic town-sites have been excavated in Orissa—Sisupalgarh and Jaugada.

Jaugada

Jaugada (ancient Samapa?) on the bank of the Rishikulya river is a fortified, roughly square-shaped area. Each side of the fortification is about half a mile long and possesses two gateways.

Apart from an earlier neolithic celt 'seemingly associated with a black-and-red ware' just above the natural soil, Period I at the site revealed evidence of extensive bead-making and post-holes and patches of floor of rammed gravel or burnt earth. Brick and stone structures were encountered in Period II but in the limited area of digging no detailed plan could be drawn up. The earthen rampart was first built over a flimsy occupational debris, consisting of sherds of fine black and red ware on the natural soil. Its extant maximum height is 14 ft 6 ins and the base width is 70 ft. There was a ditch beyond the rampart but its width and depth could not be ascertained. After this phase the top of the rampart was covered by a thick deposit of earth and soon after there was the construction of a 2 ft high wall of rubble and stone chips with a layer of large boulders—all laid in thick lateritic gravel and clay—against the inner side. The chronology is still tentative but it should go back at least to the third century BC and it continued up to the middle of the first century AD or thereabouts (IAR 1956-57).

Sisupalgarh

Sisupalgarh (ancient Tosali?) near modern Bhubaneswar is a solidly built and roughly square-shaped, each arm of the square measuring

three-fourth of a mile. The contours suggest corner-towers and eight gateways, two on each side. Traces of early occupation may be noticed for a considerable area outside the fortification and the general inference is that the fort, while being too large for a mere citadel, did not accommodate the entire population, a considerable section of which dwelt outside its confines' (B.B. Lal 1949: 64).

The sequence in the habitational area spans the period between 300 BC and AD 350 and is subdivisible into a number of occupational periods. In Period IIA (c. 200 BC to c. 100) there was a terracotta ring well with a stone paving at the mouth. In Period III (c. AD 200-350), the plans of two adjoining houses built of lateritic blocks could be drawn up. These two houses did not have a common partition wall but were separated by a gap of about 2 ft (0.61 m). The northern house had two rooms, 10 by 8 ft and 10 by 9 ft (3.64 by 2.43 m and 3.04 by 2.74 m) with a verandah, 19 by 8 ft (5.79 by 2.43 m) in front.

The defences were first built in Period IIA, supposedly in about the first quarter of the second century BC. In its Phase I it was a massive clay rampart about 25 ft (7.62 m) high at the excavated point and 110 ft (33.52 m) wide at the base. There was a series of roughly circular holes about 1 ft (0.30 m) deep and 10 ft (3.04 m) wide arranged at a regular interval of 1 ft 10 ins (0.55 m) and covered with a thin layer of clay, on the top of the rampart. Their purpose remains uncertain. In Phase II, a 4 ft 6 ins (1.37 m) thick layer of lateritic gravel was laid on top of the rampart. In Phase III, two brick walls, 26 ft (7.92 m) apart, were built on top of the gravel and the portion between these walls was filled up by earth. In Phase IV, which does not immediately follow Phase III, a revetment of thin spaced exterior was added.

Among the four gateways only the western gateway was excavated. This gateway complex basically consists of two L-shaped flanks with a 10 ft (3.04 m) wide intervening passage in the form of a ramp. There were two gates, inner and outer, set at a distance of about 100 ft (30.48 m); the sockets of these gates have been found. A 5 ft 3 ins (1.60 m) wide ancillary passage, connected with the main passage by three steps, led to the inner gate. There was a guard-room attached to the outer gate. The entire system of the gateway may be imagined to have functioned as follows. At a certain fixed hour in the night, the inner gate was closed, stopping all vehicular traffic beyond this point. Pedestrians, however, got in or out through the ancillary passage. A little later, the outer or main gate was also closed, while the guards at its back still remained on duty' (B.B. Lal 1949: 77). The gateway was

repaired several times. A remarkably interesting discovery is that early historical habitation extended in a radius of 1 km' from the Dharmarock-edict spot. Earthen fortifications were also noticed in the neighbourhood.

No other fortified early historic habitational settlement has yet been reported from this region, although there is a possibility of further discoveries.

ASPECTS OF EARLY HISTORIC URBAN PATTERN

Pattern of Growth

In the Northwest the theoretical starting point should be the Achaemenid annexation of the region under Cyrus, perhaps 'a little before 530 BC'. By turning it into a satrapy of their empire the Achaemenids politically consolidated their empire in the Northwest which had been placed as part of the Achaemenid empire within the economic orbit of contemporary West Asia. There was a secure village base in the Northwest long before the coming of the Achaemenids but I believe that the political and economic influence of the Achaemenid empire served as a major stimulus to the early historic urban growth of this area. No direct evidence, however, is forthcoming—both at Charsada and Taxila—the contemporary excavated remains are scanty. But in the case of the Bhir mound, Taxila, Marshall notes that the 22 ft wide First Street dates from the earliest occupation of the site—dated fifth–sixth centuries BC.

The evidence becomes clearer in the succeeding periods. By the time of Alexander's invasion, Charsada came to possess a rampart and a ditch while at the Bhir mound, Taxila, which attracted the curiosity of Alexander's historians and was a Mauryan administrative centre not long after, the settlement reveals a coherent plan.

The succeeding Indo-Greeks and Saka-Parthians gave this urban pattern a more elaborate and new pattern. Both at Shalishan, Charsada and Sirsukh, Taxila, the new Indo-Greek and Saka-Parthian settlements, which in their urban quest new sites where the principles of classical urban planning drawn from the contemporary Hellenistic world could be put in a clear and logical shape. The Northwest's early historic urban pattern is likely to have reached its zenith in the Kushan period when the region acquired close trade links with the west Asiatic and Roman world on the one hand and with central Asia and China on the other. The Kushan

emperors themselves had their northern capital in India at Purusapura or Peshawar. Not much is known about the urban planning of this period. There is almost no evidence from Purusapura, the Kushan capital. The pattern of the earlier Indo-Greek and Scytho-Parthian periods continues in the Kushan levels of Shalishan at Charsada. The Kushan site of Sirsukh at Taxila suggests a fortified urban complex which was distinctly parallelogrammatic in shape. It is also probable—though there is very little direct evidence—that during this period there was, to some extent, a proliferation of small urban settlements in the Northwest, particularly along the trade-routes. There must have been major habitational remains associated with the innumerable stupa sites of the region, although it is the stupa which would have come in for archaeological study.

In adjacent Kashmir, no early historic urban site except Semthan has yet been identified or excavated, but I suggest that a secure urban core could be established in Kashmir only in the Mauryan period, i.e. in the late centuries BC. Subsequently Kashmir was a major focus of India's central Asian trade and it is probable that this trade was one of the basic causative factors of the large scale growth of urban settlements in the valley.

There is no properly excavated early historic urban settlement in the Punjab plains (west of the Sutlej) either. The *Maand-panha* indicates that there was a city laid out in a chess board pattern at Sakala or modern Stalkot which was the capital of the Indo-Greek king Menander (c. 155–130 BC). This may be considered a fixed point. But the problem is how far back can one push the regional urban line beyond this point? Alexander's historians refer to a number of fortified places, each the capital of a tribe. One of these, Tulanibala in the valley of the Ravi has been excavated but has yielded very little definitive evidence regarding the settlement. One may, however, suggest that with the beginning of an effective centralized political control under the Mauryas and the consequent increased contact between the Gangetic valley and the Northwest in the Punjab plains, from the third century BC onwards came to India the place in the early historic urban map of India.

The urban scene is partly unclear in Sindh. The literary data amplifies the commercial importance of this province in the second century BC. But there where there is a reference to a Scytho-Parthian invasion in the second century BC and Bahm, nabad, Mansurah which may be equally important in the early horizon has yet been excavated in Sindh. The scene will be clearer in the early centuries AD when Sindh was part of

the Kushan empire. The still traceable Buddhist religious ruins suggest corresponding secular settlements, though it must be admitted that no such settlement has yet been suitably identified and excavated.

The sequence at Rupar may represent the early historic cultural picture in the Indo-Gangetic divide. Period III at the site is early historic dating 600–200 BC. There is no evidence of systematic planning in the site reports but the existence of structural miscellanea like the 3.65 m wide and more than 75 m long burnt-brick retaining wall of an oval shaped reservoir, etc. may suggest a settlement with more than a village status. At Sugh there are traces of fortification but as the site has only been briefly investigated and scantily reported, its date remains uncertain. The Indo-Gangetic divide in the sixth century BC belonged to the economic and cultural orbit of the Gangetic valley and the beginning of the urban growth here is likely to be the result of the factors which were operative in the Gangetic valley. But from the second century BC onwards the powerful powers with bases in the Northwest like the Indo-Greeks extended their influence over this area which also witnessed, sometime after, the growth of the tribal republics like the Yaudheyas whose coins have been well attested to in different local archaeological sites. Though there is no direct evidence it may be reasonable to infer that during this period urban growth in the Indo-Gangetic divide received a fresh impetus. Along the dried up Sarasvati valley on the southern fringe of the divide extensive early historic settlements are attested to only in the early centuries AD.

The earliest evidence of a fortification in the upper Gangetic valley comes from Kausambi. According to Sharma, the Kausambi defences came to be built around 1025 BC. But as K. K. Sinha (1973) has argued, as has been discussed earlier, there is not much reasonable basis to push it back so early. In fact, a date around 600 BC should fit in with the present evidence. At Hastinapur no fortification has been reported. The city walls of Mathura which are as yet unexcavated have been attributed by P. 2 to the Kushan period. M. C. Joshi's work has shown that it is dated to Period I at the site which has been dated by him between the second decades of the fourth century to c. 200 BC, i.e. the Mauryan period. The walls at Sankisa and Chakranagar also remain unexcavated. The beginning of the Anichenhattri fortification has been dated to the second centuries AD. The defences at Bara are said to belong to the early Mauryan or pre-Mauryan period.

In the middle Gangetic valley the fortification at Rajghat belongs to 'the middle, if not the earliest phase', of Period I which has been dated 800–200 BC. The earliest phase antedates the NBPW which appears in

the middle phase only. So the Rajghat fortification may safely be related to the appearance of the NBPW at the site. At Sravasti the defences were built in Period II, the beginning of which has been dated around 250 BC. At T. Jara-Kot, once identified with Kapilavastu, the beginning of the mud rampart has been placed in the second century BC. The fortifications at Bahraigarh and Katragarh also seem to be of this date. The fortification at Bahraigarh and the mound of Raja Visal ka garh at Vaishali dates from this period. The stratification of the wooden palisade at Pataliputra is not clear but on the basis of Megasthenes' work, it may be safely assigned to the fourth century BC. The enclosing cyclopean wall of Rajagriha has not been archaeologically dated. The literary sources indicate that it is likely to date at least from the sixth century BC when Bimbisara (c. 543–491 BC) was the reigning king. As Bimbisara is not credited with the building of this fortification in the literary accounts one may suppose that it could have been built sometime before his reign. No firm dating evidence is available for the rampart wall of New Rajagriha either. But it is supposed to have been built by Ajatasatru (c. 491–451 BC) and thus belongs to the first three centuries BC. The radiocarbon dates are too erratic to permit a precise dating. The fortification is clearly associated with the appearance of the NBPW at the site.

In the lower Gangetic valley, the antiquity of Mahasthangarh or Patanagara may be reasonably pushed back to the third century BC because of the find of an inscription in Mauryan Brahmi. A mud fortification wall is clearly visible below the Gupta brick fortification wall, and although this mud wall remains undated there is no doubt about its being early. At Bangarh or ancient Kotwara there was a brick built fortification wall, its fourth stratum dated to the Sunga period or roughly to the second century BC. The mud rampart wall at Chandraketigarh has not been adequately explored but a limited cutting traces it to the second century BC. Period II of Tamruk or Tamralipta, the first early historic site of the site, has been found to belong to the third second centuries BC.

There is no reason why the first urban centres in the Brahmaputra valley should be dated later.

Archaeological data of the early historic period are meagre in east India. At none of the excavated sites—Bara, Rauri, Sambhar, etc.—has any early historic material been dated earlier than the third century BC. D. R. Sahni calls Bara an important Mauryan site. N. Dutt of ancient Madhyamaka possesses a defence wall built in the early centuries AD.

At Vidisa in central India the early historic level begins with the

NBPW The precise date is uncertain but considering that the first phase of the temple excavated near the Heliodorus pillar comes to an end in the third century BC the beginning may be pushed back earlier. At Ujjayini the rampart came to be built in Period I, the beginning of which has been dated by the excavator around 700–500 BC. The main basis of this dating seems to be the occurrence of a sherd of the Painted Grey Ware in the core of the Ujjayini rampart. This is not much of an evidence to go by and I put the Ujjayini rampart on par with the Kausambi defences. I prefer to date its beginning around 600 BC or possibly a little earlier.

In Gujarat the early historic data seem to be available from the third-fourth centuries BC onwards. Excavated material is most inadequate but the settlements seem to indicate a period of prosperity only in the early centuries AD when the Gujarat coast was open to the Indo-Roman trade. At Shamlaji in north-eastern Gujarat, the only early historic site in the region to reveal some semblance of planning, the first phase of the rampart has been dated AD 100–300.

At Nasik in Maharashtra the early historic occupation is supposed to go back to 400 BC. The epigraphic sources, however, reveal Nasik as an important settlement as early as in the second century BC. At the other excavated sites also (cf. Brahmapuri, Kaundapur, etc.) the early historic level dates from the pre-Christian era but the settlements seem to have prospered only in the early centuries AD.

In Mysore also the situation seems to be similar. Isila or Brahmapur was a Mauryan administrative centre but almost nothing is archaeologically known about the Mauryan level. No specific data are available even from the succeeding Andhra period except the remains of a 17–18 ft wall made of stone rubble.

Kerala is entirely devoid of the relevant archaeological data but the literary evidence is secure enough to suggest urban settlements in the Kerala coast in the early centuries AD.

In Madras the early historic level may go back to the third century BC as it does at Urayur, an early Chola capital, but it is only in the early centuries of the Christian era that the data become clear and suggest the existence of urban settlements such as Arikamedu and Kaveripattinam.

The early historic settlements in Andhra decidedly begin in the second centuries BC but as excavations at Nagarjanakonda indicate, prosperity came only in the early centuries AD.

In Orissa the fortified settlements of Jajnada and Sisupalgarh belong back to the third-second centuries BC.

The foregoing resume of evidence should reveal that the archaeo-

logical data on the early historic urban growth in India are strictly limited. There is not a single properly excavated urban site in many regions of India where the excavations conducted on the early historic levels have been almost exclusively vertical in nature. Kashmir, the Punjab plains, Sind, the Indo-Gangetic divide, the Brahmaputra valley, Rajasthan, Gujarat, Mysore, Kerala and Madras should come under this category. To piece together the evidence of urban growth in these regions one has to depend exclusively on the nature of the archaeological sequence and a few other types of archaeological and literary data—epigraphs, well-dated specific literary references, etc. Even in the areas which possess some horizontally excavated urban settlements the data are not free from limitations. In some cases the publication of excavated findings has been brief. The excavations at Ahichchhatra, Sravasti, Ujjayini, Nagarjanakonda and a few other places are cases in point. And, even where the publication is fuller, certain significant problems remain to be solved. For instance, despite a large number of publications on Rajagriha no attempt has yet been made to date its cyclopean wall archaeologically. Or, as one notes in the case of the Bhir mound, Taxila, there has been no specific effort to find out if the settlement was fortified or not.

These limitations notwithstanding, the data seem to suggest the following broad pattern.

The earlier evidence of fortified urban settlements seems to be from Ujjayini, Kausambi, Varanasi (Rajghati), Rajagriha and Champā. The beginning of none of these fortifications is very precisely dated but all of them decidedly go back to about 600 BC. And, in each case, there is a probability of their being somewhat earlier. The chronological line adopted here is 700–600 BC. The early historic urban growth in India, thus, began along a belt that stretched from Rajagriha to Ujjayini through Kausambi.

There is evidence from Hastinapur and Rupa that an urban nucleus came to be established in the upper Gangetic valley and the Indo-Gangetic divide soon after or at about the same time. This was a so the period when the Achaemenid annexation of the Northwest may have encouraged an urban nucleus there.

The third-second centuries BC seem to mark the next phase of growth. This period witnessed the further growth of settlements in the areas which had already come within the urban fold in the preceding phase. One may cite, for instance, excavated settlements showing a coherent plan in the Northwest—the beginning of defence fortifications at Bhita in the upper Gangetic valley, Tilauri-Kot in the Nepalese terai, Bahraigarh and

Vaisali in the middle Gangetic valley, etc. The basic importance of this stage, however, seems to be the fact that during this period many new regions, where the precise beginning of the early historic period is still uncertain, came to develop or were about to develop a clear and unmistakable urban base. The regions which should fall in this category are the Punjab plains, Sind, Brahmaputra valley, lower Gangetic valley, Rajasthan, Gujarat, Maharashtra and Orissa. This was also the twilight period in early history in Mysore, Kerala, Madras and Andhra.

The third and final phase of urban growth in our chosen period seems to have developed in the early centuries AD, characterized by a general urban prosperity throughout the subcontinent. One also detects now an undisputable evidence of urban settlements in areas like Mysore, Kerala, Madras and Andhra where previous evidence seems to be vague and doubtful.

At this point a pertinent problem is: can we correlate this early historic urban growth-process, primarily postulated on the basis of archaeological data, to what we know of the political and economic developments of India of the corresponding periods? Considering the evidence, the answer should be in the affirmative.

Places like Rajagriha, Rajghat, Kausambi and Ujjayini, which represent the first phase of early historic urban growth, were the capitals of the kingdoms of Magadha, Kasi, Vatsa and Avanti (Raychaudhuri, 1953: 197-215). These kingdoms were among the first centralized political structures of which we possess some cognizable and unambiguous literary evidence. In the literary sources all of them came to be in shipwreck by the sixth century BC. Moreover, these places were also linked by one of the earliest well defined trade routes of India. Thirdly, though archaeological evidence of early historic writing on non-perishable material like stone does not occur before the third century BC, its beginning on perishable materials like palm-leaves may logically be placed a few centuries earlier. The point is that my postulated date of 700 BC for the first chronological line of early historic urban growth does not seem to be out of context. There is no doubt about the NBPW being as early as 700 BC at Sringavarapura. This incidentally bears out Megasthenes' dating of this ware to the eighth century BC on the basis of stratification at Bhitia.

It may, however, be pointed out that the literary data refer to some of the contemporary political entities besides the kingdoms of Magadha, Kasi, Vatsa and Avanti and mention in those contexts some important settlements as well. All that can be said is that the archaeological data seem

to suggest anything specific regarding their importance during that period. Two major instances in this context may be those of Sravasti and Vaisali. Sravasti was the capital of the kingdom of Kosala, quite a powerful kingdom of the sixth century BC. Vaisali was no less important as the capital of the Lichchhavis during the time of Buddha. None of them offers any archaeological evidence of urban planning from the level of the third period. The fortification at both these sites belongs only to the third-second centuries BC. There is, of course, no reason to assume that all early historic urban centres had to be fortified. There are many sites which are not fortified.

The postulated next phase in the third-second centuries BC also was a period of considerable political and economic significance. The Mauryan hegemony which lasted from the closing years of the fourth century BC to the beginning of the second, was instrumental in bringing most of India within the well-knit political and economic entity of an empire. Moreover, this was also the period when India came to forge close links with the West and perhaps Southeast Asia. The second century BC witnessed the Mauryan disintegration but was marked by the growth of effective regional powers and the penetration of alien rulers like the Indo-Greeks. It is only reasonable that the economic and political dynamism of this entire period found expression in an extension of the urban base.

In the early centuries AD, the postulated third and final phase of early historic urban growth, the most important single factor of stimulus was possibly trade which was both land-based and maritime supplemented by coastal trade contacts with Central Asia, China and Southeast Asia.

One may, in fact, safely assert that the archaeological pattern of the early historic urban growth in India is in no phase divorced from the corresponding political and economic realities of the country.

Elements of Size and Planning

A rough estimate of size is available only for a few of the sites. The relevant data introduced earlier, may now be represented in the following form.

Chandragiri The mounds spread over an area of four miles (6.436 km) but they represent the remains of two, probably three, different cities of different periods.

Paikuli Old ruins are spread almost all over the modern built-in area which is roughly of the same size as that mentioned by Megasthenes, 80 stadia (little

	more than 9 miles or 14.48 km) long and .5 statute (about 1½ miles or 2.4135 km) wide.
Rajagriha	The inner fortification of Old Rajagriha possesses a periphery of about 4½ miles or 7.23 km. New Rajagriha possesses a periphery of about 3 miles or 4.827 km.
Mahasthangarh	The mound measures about 5000 × 4000 ft. Its periphery is, thus, roughly about 3½ miles or 5.635 km.
Bangach	The fortified 'citadel' is about 1800 × 1500 ft. Its periphery being more than a mile.
Chandraketugarh	It has a periphery of about 4 miles or 6.436 km.
Bairat	It is about 2½ miles (4.01 km) in circuit.
Pawaya	The total area covers some 2 square miles (3.20 km).
Ujjayini	The fortified enclosure measures 1 by 3.4 miles. Its perimeter is about 3½ miles (5.635 km).
Shamlaji	The fortified enclosure measures 670.50 × 304.80 m; the perimeter is little more than a mile (20.42 ha.).
Chandravali	It is about 800 yards (731.52 m) square, a little less than 2 miles in perimeter (53.47 ha.).
Nagarjunakonda	The fortified enclosure measures 3000 by 2000 ft (914.4 × 609.6 m). The valley is about 3 miles (4.82 km) wide (55.69 ha.).
Taxila	A more or less connected plan has been observed for about 3 acres of the Bhir mound. The periphery of the Saka-Parthian Sirkap is more than 3 miles (4.827 km). The Kushan Sirsukh measures 1500 × 1100 yards (1371.6 by 1005.84 m/1378.5 ha.). Its periphery is, thus, about 3 miles.
Sugh	The fortification possesses a periphery of about 4 miles (6.636 km).
Hastinapur	The mounds extend half a mile north-south and hardly quarter of a mile east-west. The periphery, thus, is about 1½ miles (2.4135 km).

Sankisa	It is about 3½ miles (5.6315 km) in periphery.
Chakranagar	About 3 miles (4.827 km) in circuit.
Anichhatra	It has a perimeter of about 3½ miles (5.6315 km).
Kausambi	The fortification possesses a periphery of about 4 miles (6.436 km). The mounds both inside and outside the fortification spread over an area of about eight square miles (more than 20 sq. km).
Sravanthi	The city site of Mahesh possesses a periphery of more than 3 miles (4.827 km).
Taura Kot	The fortified site measures 1600 by 1000 ft (487.68 by 304.8 m). The periphery, thus, is about a mile.
Visal	The circuit of the fortified mound, Raja Visalagarh, is about a mile (1.609 km).
Pratyakakota	The fortification encloses an area of 650 yards square (35.29 ha.). The perimeter is little more than a mile.
Jagat	It is about two miles (3.21 km) in periphery.
Sirpurgarh	It is about three miles (4.82 km) in periphery.

The foregoing data are admittedly inadequate. One may, however, note that a total periphery of 3–4 miles seems to be rather common among the early settlements (Occasionally, habitations spread outside the enclosed area at Kausambi, Sravasti). The total built-in areas of Kausambi and Pratyakota, if the estimates are correct, seem to be outstanding in that context.

The usual physical shape of the city seems to be square or oblong; the latter seems to be more common while an instance of a square shape may be observed in Sirpurgarh. In some cases the alignment of the enclosing fortification has followed the lie of the land and has resulted in a shape which does not wholly conform to the usual pattern. The walls around Sirkap where the hill features have been taken advantage of and Sravasti where the city-site resembles a semi-circular crescent along the Rapti are seen as points. Where the city-sites are spread all over a narrow hill-girt valley as they are in Rajgir and Nagarjunakonda, the shape of the valley has determined the general lay-out. The walled enclosure in the shape of an isosceles triangle seems to be a lone feature, applicable only to Anichhatra. The elliptical outer ring of wall at Mathura also seems to be a peculiarity of that site alone.

The city lay within one, or in some cases, two rings of fortification. The fortification is not evident at some sites like the Bhir mound and Hastinapur. One, however, feels that in these cases it has not been properly looked for. There are quite a few instances of two rings of enclosing walls. In Sirkapasapur of the Hathial within the city-site was specifically ringed off and perhaps served as an acropolis. There is also a feeling that the excavated rampart, enclosing about 15 acres in Charsada, belonged to an inner citadel complex and did not represent the entire city. The explored quadrangular shaped rampart around the Kutra area in Mathura may represent a citadel. There is a reference to an inner citadel in Chakranagar. It is also probable that the fortification around the Rusa Visal ka garh mound suggests a citadel area and that the city of Vaisali, as a whole had an outer ring of wall. In New Rajagriha the presently observable fortification encloses 70-80 acres and belongs to the inner ring of defence. But there is also an outer ring of wall which is fast disappearing. In Old Rajagriha the fortification along the hill top is prominent enough but in the valley itself there is an enclosing ridge of earthen and stone which may be part of an inner fortification. The Ikshaku citadel in the Nagarjunakonda valley forms only a part of the total built-in area but in this case there is no enclosing outer fortification. The hills and the river Krishna serve this purpose. Only the vulnerable points have been walled off. In Kausambi there is an outer ring of defence about a mile away from the main excavated complex. In the rest of the excavated sites there seems to be only one ring of wall.

Every excavated fortification is found to possess a number of constructional phases. In most cases the core was of mud dug out of the surrounding land with burnt-brick revetments added later on. Whether a date is comparatively late, the exclusive use of burnt bricks may be noted right from the beginning (cf. Vaisali, Bangarh, Shamapuri etc.). Where stone was easily available stone blocks or rubble were used instead of burnt bricks (cf. Sirkap, Sirsukh, the outer fortification of Old Rajagriha, the later the slabs used over the earthen rampart in Sisupalgarh etc.). The width and height of the fortification varied from place to place. The width of the earthen rampart had, of course, to be wider than the burnt-brick ones. A basal width of about 245 ft (74.676 m) can be noticed in the earthen rampart of Ujjayini while the burnt-brick wall in Bangarh is only 8-10 ins wide. The use of wooden sleepers set in the body of the wall to preserve it from the scouring action of the river has been noted at Ujjayini and Rajnagar. The protective bastions arranged at regular intervals along the wall may be considered an invariable feature of the fortification.

A moat, occasionally of considerable width, usually encircles a settlement except on the river-side, where the settlement is on the bank of a river. It may be noted that the moats were not an invariable feature. For instance, there is no moat around Sirkap and Old Rajagriha where the features of the land make any specially excavated moat redundant. Separate watch towers seem to be rare except in Kausambi and Old Rajagriha. The evidence suggests that there was always more than one gateway on each side of the rampart. The gateways were as a rule (as is evident from the excavated specimens) carefully laid out and possessed guard rooms as a feature. In all excavated cases they were wide enough to permit vehicular traffic.

The data regarding the internal arrangement of streets are very scanty. A more or less intelligible idea has been obtained from Shaikhan, Bhir mound, Sirkap, Bhita and Nagarjunakonda. Isolated streets have been briefly excavated in some other sites as well but they hardly add up to a coherent pattern.

It may be emphasized at the outset that the sites of Shaikhan and Sirkap are a class apart. A glance at the available plans of these two settlements suggests that almost the entire urban area in these cases has been subdivided into a number of blocks by a series of parallel streets. This chess-board pattern is not known to occur in any other excavated site in India and it may be considered solely as an extension of the contemporary concept of classical planning in this country.

The plan of the exposed portion of the Bhir mound may be representative of the more usual mode of arrangement of the internal streets in an early city. Four streets and five lanes have been excavated in this place. Even the main street which is 22 ft wide has a distinct north-west-south-east alignment. The width of the other streets varies from between 8 ft (2.43 m) and 17 ft (5.18 m). They are more winding and possess open square areas in places. The lanes are considerably narrower, occasionally not wider than the walls. The two streets excavated in Bhita are roughly straight and roughly parallel but it may be added that they have been excavated for very little portion. One of them was about 30 ft wide while the other was somewhat narrower. In Nagarjunakonda a main street divides the military residential area to the east of the Ikshaku citadel into two parts. The respective width of the streets, lanes and alleys of the latter plan of the Kausambi site is 2 ft (7.62 m), 15 ft (4.572 m) and 18 ft (2.4384 m). In Lahanpur the passage between the houses has been noted to be 2 ft (60.96 cm) though one can not be sure if this served as an alley. The same has been observed in Sisupalgarh also.

There has been no evidence yet to suggest that the streets were systematically paved for any significant length. Occasionally, however, local patches of hard material have been observed during excavations. In Brahmagiri a rubble paved street which is 17-18 ft wide is found to belong to the Andhra level.

Evidence of a systematic street drainage system is not very extensive. In the Fourth Street and Lane I of the Bhiri mound there are traces of covered surface drains, made of limestone and *kangur* and at times lined with slabs of slate, but they do not seem to be connected with any large drain in the main street. The obvious inference is that the streets had to serve as water courses during the rains, a feature not entirely unknown in India today. This also applies to the Indo-Greek and Saka-Parthian Sirkap. In Hastinapur III there is some evidence of civic drains. One of the excavated burnt-brick drains was 3 ft (0.9144 m) deep, possessed a brick-lined floor and was traced for a length of 24 ft (7.3152 m). No drain has been reported along the two excavated streets in Bhita. Drains have been reported from Nagarjunakonda but the published evidence does not make clear whether they were civic drains or normal household drains.

Some other civic traits of a general nature have been observed in the Bhiri mound. Round refuse-bins were set in the squares and streets. It is likely that they were regularly cleared. In the Bhiri mound there were rough stone pillars, about 3 ft high above the ground, preventing the corners of the houses from being damaged by passing carts or chariots.

As the data are not representative from all over India it is not possible to make a systematic study of the house-patterns. A house in a well-todo area of the Bhiri mound occupied about 3600 sq ft (334.45 sq m) of which about 700 sq ft (65.032 sq m) were taken up by an open courtyard. On the ground floor there were 15-20 rooms, most of which were small, with windows perhaps high up in the walls. There is no positive evidence regarding the type of roofs but they were probably flat. In areas with a greater amount of rainfall, the roofs of mud houses were likely to be sloping but the general plan of the houses conformed to the usual plan of arranging rooms around one or more than one courtyard. Some houses at Kausambi and Bhita are observed to have had two sections, the section adjoining the road may have been meant for business purposes while the inner section may have been reserved for domestic functions. There is evidence of road-side shops in some sites like the Bhiri mound, Kausambi, Bhita, Nagarjunakonda, etc. Evidence of a different type of house-plan has been obtained from Brahmagiri where one of the fully excavated houses had three small rooms bounded by a long corridor like a room.

use of grooved terracotta tiles which were fixed on to the rafters with iron-nails has been noted here. In Sisupalgarh also a house had two rooms with a verandah in front. The data on the foundation of houses have been surveyed by Sankalia. He concludes that they were conditioned primarily by two factors: 'The availability of the raw material, and secondly, the adaptability to the environmental conditions—climatic, geographical, etc. in each case. The flooring material varied but a spread of brickbats covered by mud and lime-plasters seems to be common. It is probable that the house-patterns possessed regional variations as they do now.

Individual households had an adequate arrangement for drainage. A key item in this regard was the soak-well of different forms, commonly made of terracotta rings. These occur in almost all the early historic sites of India and according to Sankalia (1966: 157) 'may well become a top-object of Indian culture between 5th century B.C. and 1st century A.D.'. The entire evidence has been comprehensively discussed by Pande (1966). The most extensive data from one place are from the Bhiri mound where Marshall has observed five of these types of wells. 'Sewage was thrown down the private soak wells which were maintained in every house. As a rule there was one such soak well in each courtyard and one for the privy, bathroom, wash house or kitchen' (Marshall 1951: I-94). Surface drains built of brick or stone have also been observed in some individual houses in different sites. Pottery drain pipes with spigot and socket joints seem to have been widely distributed.

Literary Data on Town-planning

There are ample literary data on town-planning for this period. These have been collected in various places but a comprehensive summary has not yet been made by Amrita Ray (1964). In this section I propose to analyse the salient points of these literary data and try to find out how far they correspond to the picture obtained through archaeology.

The texts primarily utilized by Ray in her summary are the early Buddhist texts, particularly the Jatakas, the *Mūlndapanha*, the Jaina sutras like the *Ācārāṅga*, Kautilya's *Arthashastra*, the Puranas, particularly the *Vaishnava Purana*, the *Manu Smṛiti* and the epics. It may be mentioned that the literature contained in the Jaina sutras, the Puranas and the *Manu Smṛiti* are from a period later than our chosen time-span (up to c. 500) but they may still reflect the earlier tradition. It is also difficult to assign specific dates to the Jatakas, the *Mūlndapanha*, the *Arthashastra*, and the epics but it is not without doubt that they were collected before c. 500 A.D. and in the

the present context, evidence contained in the early Tamil literature will be taken into account.

There is no dearth of reference to contemporary cities in the Jñāna-sūtras but except in broad outline the evidence does not contain details of town-planning. All that one is able to gather is that any city of importance lay within an enclosing wall, itself within a moat. There were gateways on each side, superimposed by a tower. The city of Vaisali is said to have possessed three rings of walls. The internal arrangement of the roads has not been especially alluded to but there are references to both civic and household drains.

As far as the elements of basic planning are concerned, evidence in the Milindapanṇa is much more specific, and this evidence is worth quoting in detail:

... the architect of a city, when he wants to build one, would first search out a pleasant spot of ground ... and would proceed to build there a city fine and regular, measured out into suitable quarters, with trenches and ramparts thrown up around it, with strong gateways, watch towers and battlements, with wide squares and open places and junctions (where two roads meet) and cross-ways (where four roads meet) ... with regular lines of open shops, well provided with parks and gardens, and lakes, and lotus ponds, and walls, adorned with many kinds of temples to the gods, free from every fault. And then when the city stood there in all its glory, he would go away to some other land (Sacred Books of the East 36, Pt. II).

The itinerant architect here has perhaps been endowed with more responsibility than he actually possessed but the entire passage reminds one of a chess-board type of city, the type which could be planned on a drawing-board. Archaeologically this type does not seem to extend far in India beyond the Punjab plains and it may be suggested that the town not mentioned in the Milindapanṇa possesses only a regional validity.

What is significant in the Jñāna-sūtras is a careful, a most loving description of the city—moats, ramparts, shops, markets, cross roads, etc. The moats were broad at the top and cut deep down. The ramparts were solidly built and spread in bow-like curves. They possessed battlements, bastions, paths, doors with strong door leaves and bolts, gates, towers, high roads. Internally there were pleasure parks, gardens, pools and tanks. There were different kinds of shops, and craftsmen thronged the market lanes. The roads were lined with houses on either side.

In Pāṇini's *Aśṭādhyāyī*, the moat, the gate and the rampart exist as the important parts of a city. The city-gates were named after the names of the cities towards which they opened, a practice which is still in vogue

in the names of the gates of some medieval Indian cities. A regular planning is suggested by some references to the residential buildings and business premises, intersection of streets, storehouses, royal council-halls and places for dramatic performances.

After going through two of Kautilya's chapters on the laying-out of forts and cities (Shamasastri 1960: 50–5) one is left with a feeling that Kautilya was dwelling more on an ideal fort or city than referring to any specific reality. Kautilya's ideal city was by every standard a strictly regimented one, a place where everything was determined by caste and social hierarchy. There should be little doubt that Kautilya's ideal city conformed to his notion of statecraft where everything had its well-appointed place in the autocratic running of the state machinery.

Kautilya's abstract design of an ideal city continues also in such texts as the *Agnipurāṇa*, *Manasara*, *Sukranitisāra*, etc. The *Agnipurāṇa* arranges different occupational and caste-groups, shops, temples and such other features in different areas of the city. There are, of course, references to the square or rectangular shape of a city with gates, main streets, drains, rampart, moat, etc. but the over-all descriptive pattern remains idealistic. In the *Manasara* one is impressed by its theoretical concern for classification of cities of eight different classes, the prescribed measurements of the smallest and largest cities, etc. but the basic idea of a socially well-regulated place does not seem to have changed. The theme persists also in the *Sukranitisāra* though Ray says that it differs somewhat from the other texts in its placing of the council-house at the centre of the city instead of the palace.

There are many literary allusions to the cities, including those in the epics. Taken in confidence apart, the basic concepts of early historic town planning—moat, rampart, a coherent lay-out of streets—remain the same.

The point which should be clear even from the foregoing cursory survey of the literary data is that in its basic details the literary image corresponds to the archaeological reality. The basic shape and lay-out of the early historic Indian cities, as contained in the literary sources, is well corroborated by the archaeological records. Regarding the internal arrangement and such other details the archaeological data have *quo facto* to remain silent.

There has as yet emerged no clear archaeological picture of planning in the South India. The evidence contained in early Tamil literature however is so extensive that one feels that it is authentic. Ayvaz 1955, p. 100, has listed cities like Puhar, Karcot, Madurai and so on, which have been tes-

cribed in loving detail. The basic shape of the city which emerges is that of a well-fortified, moat encircled place with well defined roads, palaces, shops and temples, in fact an image which accords well with what we know from archaeology in the rest of India. But the essential charm of the description of a city in early Tamil literature lies in its ability to convey a vivid urban image, an image built on small, yet realistic, well known details. Such an image will, of course, elude archaeological records but from this point of view, early Tamil literature occupies an almost unique place in the annals of Indian literature.

Urban Character

Archaeological data regarding early historic Indian cities, an analysis of their pattern of growth and elements of their planning are futile if a basic problem is not considered at this stage. Were the settlements, which have in the present context been listed as urban, really urban centres or mere over-sized villages? This problem has never been tackled in detail but has occasionally been raised.

In one sense the problem does not seem to lead us anywhere. From the third century BC we get indisputable archaeological evidence of writing in early historic India and the general assumption is that the antiquity of writing on perishable materials should be pushed back a few centuries earlier. It has been noted in the present work that Phase I of the early historic Indian urban growth corresponds to the seventh-sixth centuries BC and that it ties up with an important political-cultural phase of the country, covering at least south Bihar, central India, upper Ganges valley, Indo-Gangetic divide and Northwest India. Theoretically at least there should be no hesitation in describing the India of this phase and these geographical zones as urban. The political, economic and cultural vistas of the country from the third century BC are largely clear on the basis of textual data alone. To deny an urban status to the primary settlements of early historic India would, in fact, mean that the early historic civilization of India was one which possessed no cities. A close analysis of the archaeological data alone would, however, warrant a complete rejection of such an idea.

A number of points may be suggested at the archaeological level. First one may emphasize the physical magnitude of the settlements. It has been noted a periphery of 3-4 miles applicable to the walled enclosure only seems to be common, in the case of the major settlements at least. As the corresponding data on the village sites are almost non-existent,

it is difficult to discern how this peripheral extent stands in contrast to that of the village-sites. But to anyone familiar with both these types of settlements in the field there should be no doubt that the city sites represented a new scale of physical magnitude beyond the scope of any contemporary village settlement.

This physical magnitude is reflected not merely in the areal spread but also in a cardinal feature of city planning, the rampart and its associated details. It is not that a village may not have a defensive palisade but the city ramparts which have been excavated suggest by their massiveness, constructional care and elaborately laid out gateways, bastions, moats and other defensive measures, that they were meant to defend and mark out a type of settlement whose significance in the social, political and economic landscape was far greater than that of a village.

Archaeological evidence of the internal lay-out of cities is admittedly inadequate but where available, it is suggestive. Even if one sets aside the data from Sirkap and Shaikhan where the streets are laid out according to a grid pattern, one should not ignore the evidence from the Bhira mound which is likely to reflect more truly the planning of a typically Indian city. The streets and lanes at that site may not conform to any neatly aligned pattern but its 22 ft wide main street does not by any stretch of imagination fall in the category of a village street. This is also true of the excavated streets at Bhita which measure about 30 ft in width or the 25 ft wide main streets east of the Ikshvaku capital at Nagarjunakonda. In this connection it may also be pointed out that a systematic street drainage system may not have been widely spread but it doubtlessly existed, as is evident at sites like the Bhira mound, Hastinapur and Nagarjunakonda.

Another feature which needs emphasis here is that within the city a distinct area was marked out as the palace complex, quite often with its own defence system. The evidence is limited but where it is clear this is a part of the general picture. The point is that one does not expect this type of planning in a village.

So far as the excavated houses are concerned, one notes that there is a marked, particularly distinctive constructionally or materially to separate the town from the village houses except perhaps their general commodiousness (cf. the houses at the Bhira mound, Bhita, Nagarjunakonda, etc.) and a corresponding more frequent use of burnt bricks or stones as constructional material. At the same time it may be emphasized that in early historic cities there was exactly a city of palaces—even in the Cretaceous of the Tertiary age—and later, the houses were chiefly built of wood and sun-dried clay. So far as the walls that the quickest visitor might see to

enter a house was by digging through the wall. Residentially speaking the biggest cities were little better at first than overgrown villages (Mumford 1961, 129-30).

The excavated evidence is not extensive enough to permit any elaborate inference regarding the different occupational groups and other aspects of the social situation in an early historic Indian city. To dwell on only a few pieces of evidence, a shell worker's shop has been excavated in the Bhir mound. The evidence of a bead-industry is explicit in Ujjain. There is a goldsmith's shop in Nagarjunakonda. Arikamedu yields some evidence of dyeing. A house in Bhita has been called a 'house of the guild' on the basis of a locally found inscribed terracotta seal. Quite a number of antiquities from different settlements (cf. Taxila, Arikamedu, Nagarjunakonda, etc.) suggest foreign trade. The discovery of a large number of coins in the city sites may also be indicative of their general economic prosperity. What is highly suggestive is that some of the early coin-types of India, have, in fact, been grouped after the names of different cities whose economic organizations were responsible for their circulation (for some examples, Allan 1936).

It is precisely in this context that epigraphical data, also a kind of archaeological record, are most helpful. To take only a few instances, the early inscriptions from Mathura refer to occupational groups such as bankers, iron-mongers, dyers, perfumers, workers in metal, goldsmiths, actors, dancers and courtesans. The Sanchi inscriptions refer to bankers, clerks, merchants, royal scribes, musicians, weavers, ivory workers, foremen of artisans, surveyors, carpenters, and horsekeepers. The Bhabhul records refer to arrow-makers, troopers, gardeners and sculptors. The Joginara cave inscription refers to a copyist from Varanasi besides mentioning a *devadasi* or temple courtesan. The Sohagaura copper plate inscription refers to the 'great officials' of Sravasti. The early inscriptions from west India also possess a number of such references. The Kaibheri inscriptions refer to merchants, jewelers, goldsmiths, etc. from the two west coast port cities of Kalyan and Sopara. There are similar references in the donative records of Bhaja, Karle, Amaravati and Pauni—in fact, of many other places of this period. Considered as a whole, the archaeological data are suggestive enough of the economic organization as a diversity centred in the cities of early historic India (these data are listed by Luders, 1912).

Two other aspects of contemporary urban centres need attention. In most of these excavated sites have yielded art objects in varying quantities. Besides, as the donative records indicate, the city dwellers contributed to the making of the contemporary Buddhist stupas which in the

engraved scenes reflect adequately the art-tradition of the period. What is relevant here is that the art tradition of early historic India is an urban art tradition. Pieces of Mauryan art have been thought to be the products of the urban, centralized court-ideology of the Mauryas but even when a discernible popular participation in the making of art objects is discerned in the succeeding periods, the urban element remains a constant, distinct factor. This urbanism is manifest not merely in the wide variety of non-village themes which cover almost all aspects, both playful and serious, of human life but also in the inherent plastic treatment of these themes which display a sensuous and sophisticated awareness of the human body itself. What Coomaraswamy wrote about western Indian art from c. 200 BC to AD 20 is true of the early historic Indian art in general.

The whole approach, like that of early Indian art generally, is realistic, free without *innere pensee* or idealization. The main interest is neither spiritual nor ethical, but altogether directed to human life—luxury and pleasure are represented, interrupted only by death, and these are nothing but practical facts, coloured by the inherently sensuous quality of the plastic language. (Coomaraswamy 1961)

Secondly, it may also be noted that most of the early historic urban centres were religious centres in some form. There have been very few places where religious complexes like stupas, monasteries and temples have not been excavated either inside or in the vicinity of the city. Of the contemporary religions, Buddhism and Jainism, in particular seem to be closely linked with the urban centres and urban occupational groups like merchants, etc. The location of important Buddhist complexes within the reach of the cities or along the trade routes frequented by city merchants amply corroborate this. In fact, Max Weber's assertion, 'like Jainism but even more clearly, Buddhism presents itself as a product of the decline of urban development of urban kingship and the city peoples' (Weber 1958, 214) is clearly borne out by the archaeological data.

None of the foregoing facts should come as a surprise to any student of early Indian history but taken collectively, they do suggest that the centres of the period represented a new complexity and scale of urban settlement and were also the focal points of the contemporary economic, cultural and religious life. So far as the social and social structures and the functions of these settlements are concerned they were decidedly urban and not merely oversized villages. In this context one notes that this structural-functional approach has been employed by St. Berg in his analysis of the pre-industrial cities (St. Berg 1962).

A concise summary of the relevant literary data has been presented in the

of the present work which is only concerned with putting forward an archaeological perspective. A brief but good summary of these is available in Bose's *Social and Rural Economy of Northern India, c. 600 B.C. to AD 200*. His discovery is that the contemporary cities were the media of politico-economic, religious and spiritual expression, and were an educative force as well (Bose 1961, I: 193–224). The literary data thus broadly substantiate the picture formed through an archaeological analysis.

The literary data also indicate that there was a definite urban consciousness in early historic India. 'Nagaraka' or 'city-dweller' seems to be a familiar term. Vatsyayana's ornate erotica seems to have been written primarily with this class in mind. There is at least one Jataka story (*Nakhatta-Jataka*) (Cowell 1957, I: 124–6) which is a significant pointer in this direction. There one finds some villagers saying that the city-dwellers lacked common decency.

The rural–urban dichotomy was a sociological fact and existed in the people's consciousness just as it does today. This, of course, is not deducible from the archaeological data (for a discussion on the rural–urban dichotomy in the early historic Indian context, see Bose 1961, I: 225–6).

Chapter Six

Problems and Perspectives

In the preceding chapters we have systematically reviewed the basic archaeological data related to the development and features of urban centres in different parts of the Indian subcontinent both in the protohistoric and early historic periods. I do not claim to have been able to isolate all or perhaps even most of the urban sites but the current situation in different geographical areas has certainly been assessed. Since, at the time of writing, *Indian Archaeology—A Review* was available only up to 1987–88, we cannot claim that even our 'current situation' is quite current. However a large mass of data covering a wide chronological and geographical range has been analysed in the preceding chapters, and some thought may be given here to the elucidation of these data as the archaeological source of the history of urban centres in ancient India.

We have to be aware of the following issues. First, in a large number of cases the settlement perspective is not clear. Though detailed explorations have been undertaken in many areas, especially in the context of the Indus civilisation and the neolithic-chalcolithic and Iron Age cultures in inner India, there are still some major uncertainties. We have been concerned primarily with the sequence of horizontal site spreads and stratification in a given area: a specific number of sites of a particular period or cultural level to be followed by a specific number of sites which belong to the succeeding cultural phase, and so on. It is, of course, possible to make on this basis some salient observations on the location and distribution of sites of various phases in a particular area. On the basis of the study of surface scatters scholars have also tried to make a distinction between 'industrial' and 'non-industrial' sites. These are no doubt useful exercises but they still do not free us from some major working problems. For instance, the picture of a steady growth in the number and size of these settlements in the surveyed areas may be more deceptive than we are willing to admit. Most of these sites are multi-cultural sites; how do we estimate the sizes of these settlements in different periods? In the Indian context where most of the ancient village and urban settlements incorpo-

rate directly, or in their vicinity, modern habitations, it needs a very brave person to be even vaguely confident of the areas of successive occupations at a site on the basis of surface scatters. Secondly, surface scatters of slag, pottery kilns and debris of various manufacturing activities do not necessarily indicate in the Indian context that the site did not have agriculture as its major function. Most of the modern Indian villages have different occupational groups living within their boundaries but this does not take away the significance of agriculture in their economy. Some villages, of course, are more famous because of the larger number of potters, metalsmiths and other craftsmen in them but it may be stated that such villages form only a small percentage of the total number of villages in an area and perhaps it is unwise to jump to conclusions about the function of a particular settlement mainly on the basis of surface scatters. To come back to the main point, we can assess the contrasts or variations between sites of different periods in a given area only in terms of time blocks. For instance, we can say that the general size of settlements in the black and-red ware phase of West Bengal went up to 8-10 acres whereas in the succeeding early historic stage a limited number of settlements measured appreciably more in extent, going up to 250 acres in one or more cases. However, we should note that the black and-red ware phase, as we understand it today, covers a history of about a thousand years (approximately from the middle of the second millennium to the middle of the first millennium BC) in itself, and more if we consider the point that most of these black and-red ware settlements contain early historic materials too in their surface scatters. So, it is only a handful of settlements which show a great increase in their size. The point is that unless one is dealing with a situation where one set of single culture occupational sites is followed by a different set of such sites, it is difficult to arrange them in a linear progression towards urban formations. This is also true of the urban history of a particular urban settlement. Many of our early historic urban settlements contain remains right from the protohistoric period to the Gupta, post-Gupta and later periods. We know the sequence but we do not know anything of the horizontal succession of settlements of different periods within the overall framework of a particular city site? The answer has to be in the negative, because, for one thing, most of the urban sites we have dealt with are known through their cultural sequences and not another way, where excavations have been fairly detailed, as in the Mauryan Bhir Mound, the exposures have been concentrated only on one or two periods and not on the different phases of the city.

The settlement perspective is not clear for a host of other reasons too.

For instance, whereas the estimates of the sizes of individual settlements offer a good indication of the settlement hierarchy of a given period, sometimes the evidence furnished by settlement-sizes can be quite ambiguous. The case of a number of Harappan and related settlements with apparently very large occupational areas in the Mansa taluk of the Bhatinda district comes to mind. In any case, because the settlement perspective is not clear in its detailed nuances, the picture we have of ancient urban development in India is essentially a static one.

Considering the limitations of the usual ground survey of sites and the inferences made therefrom, is there any way of getting round them and trying to impart a fuller understanding of the ancient landscape? As far as I have been able to understand in the light of my experience, a detailed study of the agricultural geography of a given area with reference to the location of its ancient settlements may provide some insight into the basic character and functioning of these settlements. As most of our ancient sites are overwhelmingly rural, this approach is likely to prove useful. In the same way, the study of the sources of different raw materials that one encounters in surface scatters of different sites in a given area may give an indication of their intra- and inter-regional contacts. On the basis of excavated materials such a study has been undertaken by N. Lahiri in the protohistoric and early historic (up to c. 200 BC) contexts of the subcontinent as a whole, but there is great scope for undertaking studies of this type on the basis of carefully assessed surface finds in different areas. The issue and the approaches I have outlined here do not call for large excavations, but they need small scale investigations on the ground, sorting out one local issue after another.

A considerable amount of basic ground data is now available in Indian archaeology—settlement distribution maps of various areas are quite impressive—but the trouble is that the associated field data are not published in many cases. For instance, the Harappan and related sites which one now finds plotted between the Hakra course and the Yamuna must be considered one of the achievements of post-1947 archaeology in the subcontinent, but the fact remains that we know very little about them because nobody has bothered to publish the detailed field notes on these sites or tried to work out the basic agricultural geography of the entire region in relation to these sites. Apart from working out the landscape of ancient rural settlements in relation to the agricultural character and intra- and inter-regional contacts for raw materials, we should perhaps try to weave the few urban settlements of such areas into these landscapes as administrative centres, redistributive centres of the local agricultural pro-

duce and some raw materials, craft-activity centres and finally as religious and trade centres. In each case, close contact with the ground is essential. As a preliminary, we must know about the local routes, in detail, and also about the inter-regional lines of movement passing through the area. It is unlikely that all this will be achieved in a short time span but nonetheless our efforts should be directed towards achieving these goals. There have been limited excavations of city-sites but merely large-scale exposures of big sites are not necessary in this context. A proper settlement perspective is essential and the present increasingly popular settlement studies can be expanded by considering a few ground realities. While studying such ground realities, historians can take advantage of the data furnished in various inscriptions of the period, but both the archaeological and more orthodox historical aims are more or less the same in this context, i.e. the context of the general rural landscape of ancient India without which its urban landscape cannot be meaningfully understood in any way. I endorse what B. D. Chattopadhyay (1990: 125–6) has argued in the context of his early medieval village settlements:

Viewing rural settlements and by implication village communities as settlements does not, for one thing, take cognizance of settlement hierarchies, and such hierarchies, if needs be, stressed, do not necessarily imply discontinuities between urban and rural settlements alike. Hierarchies could exist in rural space as well since settlement size is not always a satisfactory determinant of hierarchy; the concept of hierarchy can be considered in terms of both how rural settlements were socially organized and how differently in livability values existed in rural landscape. Rural space did not consist of single units or a continuum, or of extended horizontal infinity. There may have been different levels of individual units, with variations within them, could intersect. Viewing rural settlements not simply as different time formations would help to acknowledge the possibility of the existence of nodes even in rural space in the past. Chance, of course, would have to historical processes which could originate at the rural level or elsewhere.

The second major issue of importance is the general limitation of the work done on the urban settlements themselves. In this regard the Harappan cities have been treated better than the early historic ones. The excavations on most of the Harappan cities have been detailed, bringing out the basic data on planning. In the case of the Harappan cities the basic problem seems to be that of publication. The result of years of excavation work at Kalibangan, Banawali and other lesser places remains unpublished, and whereas there should be detailed annual bulletins on the ongoing work at such an important—and in many ways unique—site as

Dholavira, we are getting information only in dribbles. However, it is in the context of early historic cities that the level of investigation has been abysmally low for many years, barring Taxila, Bhita and perhaps Nagarjunakonda; there is not a single early historic site in the subcontinent which has been subjected to detailed, horizontal, phase by phase exposures. Although we now know more of the archaeological sequences and distribution of various types of sites in the subcontinent, our knowledge of its early historic cities has not significantly increased since the time of Marshall. No modern nation state of the subcontinent has yet bothered, through prolonged, detailed and systematically published excavations to bring to life the image of an ancient city in the post-1947 era. There are no doubt valid historical reasons for this state of affairs. In modern India, for instance, much of the time and money available has gone into making our protohistoric past alive, and this is more or less true of Pakistan. In Bangladesh and Nepal the structural sites representing stupas and temples have remained centres of attraction—but no early historic settlement, except perhaps Nagarjunakonda and Kausambi, has drawn the attention of archaeologists, and as things stand at present, data on the early historic part of the Nagarjunakonda excavations are still awaiting publication, and the results of many years of work at Kausambi have been bogged down in unsavoury controversies. It is difficult to imagine an early historic settlement grander in scale or richer in historical association than Kausambi, and this site ought to have been taken up for detailed year-by-year excavations by a nationally organized team in post-Independence India. Mahasthangarh in modern Bangladesh is another rare, large and understudied early historical site, the normal occupational levels of which have still not been excavated. However, it is not merely the lack of detailed horizontal exposures of early historic sites which is worrying. The even when the investigations have been conducted at many of these sites is worrying too. In the case of fortified settlements the work has generally been limited to cutting across the defences and the attempt to relate this cutting to the stratigraphy of the occupational remains in the habitation area. The emphasis has exclusively been on dating, especially the dating of the defences and in no case has there been an conscious effort to understand the basic details of the settlement as a whole. Even when prolonged excavations have taken place, as in the case of Chandraketugarh, the results have not been edifying from the point of view of urban planning, because in this particular case, excavations were concentrated in a temple area in a locality known as Khana Mihar Dhibi. I must hasten to add that there are many reasons for the apathetic situation, some

of them being the lack of money, time and (in many cases) suitable infra-structure. As a result even the basic task of exploration has not yet been attempted in some cases: for instance Pawaya or ancient Padmavati in central India (Gwalior) which is said to measure 4 sq. km in extent has not been investigated since 1936-37. There are many examples like this (cf. a site near Rajmahal which is supposed to cover a few villages of the area Jhimjhimaia-Kalishthan).

In this work I have been concerned with only the excavated archaeological data from various sites in various areas. I would like to emphasise that this is only one of the possible dimensions of the investigation of early historic city sites. In a series of publications which I have cited at appropriate places, B. C. Law has examined the literary references to some of the major sites like Rajagriha, Ahichchhatra, etc. The early history of an individual city (Kausambi) was dealt with by N. N. Ghosh. More recently, the contributors to the volume on Mathura, entitled *Mathura: the Cultural Heritage* (D. Srinivasan 1989) have explored in some detail the historical background, society and economy, religious sects, numismatics, archaeology, language and literature, epigraphy, art and iconography, although one would have liked a detailed section on the settlement perspective of the Mathura region as a whole. Detailed multi-dimensional exercises to explore the cultural history of an ancient Indian city are laudable academic endeavours and one hopes that exercises such as the one at Mathura will be attempted both at the individual and collective level in the context of other major early historic urban settlements.

There is still a major problem in the domain of literary references to ancient Indian settlements, especially cities. In a previous chapter I have pointed out that the literary evidence on ancient Indian town planning corresponds, on a general level, to the basic image which emerges from the archaeological data. In his book entitled *Urban Centres and Urbanisation as Reflected in the Pali Vinaya and Sutta Pitakas* K. T. S. Sarao (1990) has highlighted this particular dimension in great detail on the basis of the early Buddhist literary sources selected by him. He begins by establishing the main functions of various types of settlements mentioned in this literature:

Settlement	Type	Main Function
Kut/Nivasa	rural	shelter
Gama	rural	multiple, but limited
Nigama	urban	commercial
Nagara	urban	multiple

Para	urban	defence cum administration
Pattana	urban	commercial
Pata-bhedanam	urban	commercial
Raashani	urban	political
Mahanagara	urban	multiple

Sarao (1990) then proceeds to describe some settlements on the basis of textual references. He believes that the following settlements have been identified on the ground:

Aggalapura (Tara Sujan in U.P.), Alavi Newal near Kanauj?, Allakappa (Nandaagarh near Betiah?), Amaravati (the stupa site), Andhapura (Bezwaada in Andhra?), Anoma (?), Arittha (Shorkot in Panjab?), Atthakanagara (Hathagaon on the Bagmati river near Patliputra), Varanasi, Bhaddiya (Bhadariya near Bhagalpur?), Dantapara (Orissa-Andhra border?), Devadaha (near Piphrawa?), Dhanavati (Dhannagaon in Gaya), Dvaraka (modern Dwaraka), Erakachehha (Iran), Gaya, Hansavati (Hanswa in U.P.), Hatthipura (Hastinapur), Indrapatta (Indraprastha), Jetuttara (Nagari near Chitorgarh), Kajanga (Kankole near Rajmahal), Kampilla (Kampli), Kannakappa (Kanauj), Kapilavasthu (Ganwar), Kavirapattana (Kaveripattanam), Kekaya (Guruk in Panjab), Kesapatta (Kesariya near Basath), Khemaka (Khemurapur in Basti), Kotayagata (Kotah Dih near Basti), Kosalika (Kausambi), Kakkuta (Peshawar), Kumbhavati (Nasik?), Kusinara (Kushinagar in U.P.), Machchikasanda (Masaul Dih near Benares), Madhara (Mathura), Mahissati (Matismati on the Narman), Mithila (Janakapura in Nepal/terai), Nagara (Nagar on the Beas, Himachal Pradesh), Nalanda (Nagaraka), Nagara in the Rapti valley, U.P., Pannakata (Palghat in Kerala), Patliputta, Rajagala, Ramagata (Deokali east of the Ganges), Rorika (Alor in Sindh), Sadhaka (Nawabganj in Barabanki, U.P.), Sakala (Sialkot), Saha (Bhita), Saketa (Ayodhya), Samakassa (Sankissa), Sarana (Saran Khis in north Bihar), Savatthi (Sravasti), Sena Nagama (Bairath), Setavyat (Satiaba and Baredita near Sravasti), Sihapura (Sior in Gujarat), Sivhavati (Khopoa Dih in Basti), Soreyya (Sorol near Atranj khera), Suttavati (near Banda?), Sun-samaragiri (Chunar), Sapparakka (Sopara), Takkara (Ter?), Takkasila, Thuna (Thaneswar), Udumbara (Pathankot?), Ujjeni (Ujjayini), Ukkavela (Sonpur in Bihar?), Vamsa/Vanasa (Tumain near Gwalior), Varana (Bulandshahr), Vedisa (Vidisha), Veranja (Vairankhera?), Vesali (Basarh) and Velhadipa (Betiah).

In addition to these 'identified' settlements Sarao mentions fifty-two 'unidentified' ones. These were all mostly urban settlements of different types. They are spread over a very wide area from Taxila in Panjab to

Kaveripattinam in the south and from Gujarat to Bihar. However, except in the cases where the problem of identification has been solved by the discovery of a suitable inscribed material, no suggested identifications are beyond pure speculation. The problem of the identification of ancient Indian cities is far from being over; the names of different settlements given in the literary and epigraphic sources of a given area should be carefully studied in the light of the available archaeological data of that area. This calls for many years of patient work. Sarao (1990) further gives a list of the frequency of urban settlements in the Pali Vinaya and Sutta Pitakas, and in this list he mentions 173 urban settlements. He builds up a neat order of inter-related settlements.

The overwhelming dominance of capital settlements, the clear hierarchical ordering of settlements and the concentration of urban settlements is worthy of notice. Differentiation based on size was accompanied by a clear delineation of functions, and the smaller ones by their unique roles; villages served as primary agricultural producers, *vikramas* participated in trade and redistribution. The capitals not only performed all these functions but also supported elite residence, large religious establishments, civic and ceremonial structures (Sarao 1990).

Another major problem is to determine if there was an 'urban decay' in the Gupta and post-Gupta periods, as propounded by R.S. Sharma (1987). One of the major points to be appreciated about the preindustrial cities is that they served some distinct politico-administrative, religious, cultural and economic functions in relation to the villages in their hinterlands. This is what Nissen implies by his idea of 'centre' and 'surrounding' (chapter 1). To argue that such functions ceased to be relevant in the context of Gupta and post-Gupta India is not logical and based on facts. As far as the literary evidence is concerned, one has only to remember the description of Ujjayini in the *Meghadutam* of Kalidasa who has been generally placed in the Gupta period. To say that urban centres ceased to exist in the Gupta period or that they became subject to a process of decay specifically from that period onwards flies straight in the face of the contemporary literary image of the cities. Secondly, Sharma, while trying to underline the factor of decay, argues that the material remains in the form of structures, etc. in the excavated levels of the period are not at all impressive and that this suggests 'decay'. The main argument is that the excavated structures of the period are not made of good quality bricks. Also, such burnt brick structures are generally limited in number. As this is an archaeological argument, I may point out the following facts. First, it is not at all true that the excavated Gupta period remains from our major sites are by and large devoid of good quality brick constructions. At Manasthangarh, for instance, there is a burnt-brick fortification wall of

the Gupta period, and miscellaneous structural remains of the period have been excavated at many sites in north India. However, the point is—and one supposes that this is Sharma's main argument—that the excavated structural remains of the period at most of our sites do not impress one with quantity, or in some cases, even with quality. As far as quality is concerned, the use of bricks dug up from the earlier levels has been pointed out. The occurrence of 're-used bricks' in the structures of the period may suggest that the hey-day of urban prosperity was over. Answers to such problems are fairly straightforward. Has there been any excavation which aimed at the horizontal exposure of the Gupta period level at the site? In any case, horizontal exposures of our historic sites have been singularly rare in recent years, and what we know of the Gupta period in terms of its excavated remains must be considered negligible in the long run. Moreover, how do we date the Gupta period in the archaeological sequence of the Gangetic valley and elsewhere? I raise this question because it is my belief that the divisions between the different dynastic groups (i.e. the Maurya, Sunga, Kushan and Gupta dynasties) in our north Indian archaeological columns are not always very clear, a good part of the exercise being subjective. The distinction between the Kushan and the Gupta periods is not at all sharp in the archaeological sequence, and what we get in most cases is a routine labelling exercise based on 'field intuition', and rarely on the basis of well-dated and stratified antiquities. One should be wary of jumping to conclusions about the cultural prosperity or the lack of it during the Gupta period on the basis of the excavated data. It is not also generally appreciated that by the time the Gupta and post-Gupta levels are reached in our early historic sequence, the mound becomes fairly high, depending on the local situation, and it is probable that the main settlement of the period is no longer on top of the mound but has shifted to a more level ground elsewhere. While assessing the location of major occupational remains of this period, this feature needs careful consideration. So, it is not really a question of looking for whatever Gupta and post-Gupta structures exist on top of the excavated mound and jumping to conclusions on that basis but taking a whole lot of settlement issues into consideration before passing judgement on the settlement features of that age.

The more orthodox historical data against Sharma's hypothesis have been carefully summarized by Sheena Punja (1990) on the basis of B.D. Chattopadhyay's researches.

From epigraphic evidence it is clear that sites existed which show certain 'urban' traits and that there were distinct differences between these and 'rural' settlements. Sites like Tattvanandipura identified with Ashvini Baladashabara

Siyadoni (near Lalitpur in Jhansi district), and Gopaziri (Gwalior), among others, testified through epigraphic evidence, seem to exhibit evidence for the existence of guilds, merchants, traders involved in overland and inland trade, large settlements, well-planned roads and houses, and dense population. Apart from the new sites, certain earlier sites like Varanasi and Ahichhatra survive right up to medieval times. Epigraphic evidence further shows that terms for different settlements, i.e. *grama*, *pura*, *nagara* (or distinction between rural and urban settlements) that existed in early historical times continued during this period. There is evidence of foreign trade in inscriptions and literary texts, so the complete cessation of trade cannot be adhered to totally.

There is no doubt that certain sites declined or were deserted after the early historical period, but there were others which emerged. The nature of early medieval settlements was different from their predecessors, being more rooted in their regional contexts; they acted as nodal points in local exchange networks corresponding to different ties of regional power—unlike the early historical towns, which were directly linked up with centres of authority with supra-regional focus. Hence, rather than talking of an urban decay, it would be more fruitful to try and understand the change in the nature and location of settlements in the Gupta and post-Gupta periods.

In the present volume I have offered a coherent account of the early urban history of India with reference to a host of related issues—distribution, context, sequence, chronology, physical features, historical character, and so on. But I have also tried to offer in this volume a wholly archaeological and indigenous framework of early cultural development in the subcontinent beginning with the Indus civilization. In the context of this civilization I have made the following hypothesis.

With the growth of villages, at the Indus and related alluvium Baluchistan, Kirthar piedmont and Sind Kohistan became separated as an orbit from the cultural development in the valley, which got more or less nucleated in the Cholistan area of the Sarasvati-Hakra drainage. Much regarding its beginning is uncertain but there is perhaps no point in denying that the sites of the Hakra were complex in Cholistan date from the fifth millennium BC. In my discussion I have accepted Louis Flam's reconstruction of the palaeogeography of Sind, the Indus and the Hakra channels joining lower down in Sind and flowing jointly into the present Rann of Kutch which must then have made the modern Kutch peninsula an island. There is no guarantee, of course, that the palaeochannels which Flam observes in aerial photographs and satellite images are dated, or even can be precisely dated—but the fact remains that this reconstruction is as good as another, and in fact makes sense in the light of the historical testimony that the present flow of the Indus via Sukkur and Rohri is

a much later development. Flam's distribution maps may also underline the fact that the distribution of the Hakra complex and the early Harappan Kot Diji level was in no way oriented towards the Kirthar piedmont and beyond, which became the focus of the Amri culture. The arrowline of succession from the Hakra complex to the early Harappan and thence to the mature Harappan is crystal clear from the simple distributional point of view in Cholistan, and it is there that the origin of the Indus civilization must be considered to have taken place. I suggest two lines of dispersal after its origin, one towards the Indus, and the other along the course of the combined Hakra-Indus flow towards Kutch. Apart from being a major craft centre in the heart of the most prosperous agricultural area of Sind, Mohenjodaro could also serve a purpose similar to that of Shikarpur in the nineteenth century and earlier when the entire Bolan trade used to come through the Kachchi plain to this area of Sind. This must also have attracted the trade coming overland from Iran through the western section of Baluchistan. Cotton, grazing land and semi-precious stones of Kutch must also have attracted the Indus civilization people at this stage. **The sites in Indian Rajasthan, Haryana and Panjab were parts of a secondary expansion towards the Siwalik piedmont along the drainage lines of the Sarasvati-Drishadvati.** Another line of secondary expansion was towards the peninsula of Saurashtra and mainland Gujarat. The expansion towards Harappa could be a part of the possible movement upstream from the Muttan area in the central Indus valley. I suggest that there was not a homogeneous Harappan empire, on the contrary, if we look at the later political history of the entire region, we are likely to agree in favour of the idea of a number of separate kingdoms throughout the Harappan distribution zone. I have further argued that we need not expect the existence of an Egyptian or Mesopotamian type of kingship in the Harappan context. The Harappan kings were more likely to preempt the later day historical pattern of kingship circumscribed within the social and religious duties of duty towards subjects. Quite naturally they do not loom large in the archaeological record. Those who doubt this assumption may recollect the fact that had it not been for Asoka's inscriptions, there would have been no archaeological evidence of the great Indian monarch.

I have suggested two factors which played a catalytic role in the development of the Indus civilization: the ability to harness the power of the rivers before they could settle in the floodplains by devising a system of overflow irrigation, and the intensification of craft activity as evidenced by the stupendous metallurgical activity in northeast Rajasthan dating from even before the early Harappan stage. The evidence of an

irrigation system in Sind was, in fact, argued by Marcia Fentress in her article in Misra and Bellwood 1986, although she did not try to establish any link between the origin of this irrigation method which continued upto the early years of the twentieth century and the origin of the Indus civilization. The situation, as I have shown citing the relevant gazetteers, is clear as regards the Indus, whereas there is no specific evidence from the Hakra stretch in Cholistan. However, in the light of the French postulate of irrigation canals upstream in Haryana, the development of an irrigation network is a logical postulate in the context of the Hakra too. The later excavations at Ganeshwar have demonstrated the entire sequence of metallurgical development in the copper-rich northeast region of Rajasthan, beginning with a mesolithic stage, and the fact that about 2000 copper artifacts have been documented in the not-so-extensive excavations of a single site and that more than 80 such sites have been recorded in this region is good enough proof of this metallurgical activity which led to the general intensification of all craft activities in the early Harappan stage.

Regarding the decline of the Harappan civilization I have pointed out that in the areas of its secondary expansion, i.e. in the large tracts of the Indo-Gangetic divide, the upper Doab, the Saurashtra peninsula and mainland Gujarat, the early Harappans and the mature Harappans were essentially imposed on hunter-gatherers, and this fact in itself must be considered an impediment in the process of striking deep urban roots in these areas. Once the civilization in its heartland weakened due to the slow but inexorable process of the drying up of the Sarasvati-Hakra channel and had to transform itself into a number of densely distributed but much smaller agricultural communities, the process could not but affect the entire Harappan distribution area, and Harappan urbanism, as we know it in its mature form, was easily lost.

From this 'late' phase onwards the Harappans moved in two directions: one towards the Doab and the other towards Maharashtra and Malwa. I have argued that they interacted with the regional hunter-gatherers, and the neolithic, chalcolithic communities of the second millennium in inner India were primarily the result of this interaction. The Harappans introduced a higher productive system to the hunter-gatherers of inner India, and incorporated them within it. In view of the fact that the process of incorporating the hunter-gatherers within the fold of the caste structure or the Hindu productive system has continued to this day, the hypothesis I have offered perhaps makes more sense than is generally admitted.

To come to a more specific and tangible issue, some transitional levels

between the early Harappan and the mature Harappan have now emerged at such sites as Banawali, Harappa and Dholavira. Once the details are published, we shall be better able to examine the process which led to the emergence of the Indus civilization. Meanwhile, on the basis of personal information which has been very kindly supplied by R.S. Bisht I reproduce below the basic stratigraphic sequence of Dholavira, beginning with its lowest level.

- Period I — terracotta cakes, perforated ware and other varieties of pottery, blades of chert and chalcedony, evidence of copper-working, 11 m wide fortification wall, 65 cm thick occupational deposit
- Period II — the earlier pottery types continue but with more shapes, profusion of beads, further 2.30 m added to the width of the fortification wall, 90 cm thick occupational deposit
- Period III — typical Harappan pottery shapes appear but are not dominant, evidence of more industrial activities, drill-bits for bead-making, 3 seals without inscriptions but with motifs (in one case pipal leaf motif), peripheral wall added, the construction of a 'middle town' and 'citadel' with 'ceremonial' ground between the two, a series of water-reservoirs built towards the later phase, the width of fortification further increased by 4.50 m, 3.30–3.60 m thick occupational deposit.
- Period IV — many seals, lower town added, peripheral wall extended, special clay material with stone chips added for fortification, a radiocarbon date of 2323 BC uncalibrated from the lower part of the deposit, natural disturbance (earthquake?) at the end of the phase, 4.50 m thick occupational deposit.
- Period V — phase of decline, the settlement not properly maintained, 0.80–1.00 m thick occupational deposit.
- Period VI — rickety houses, seals without figures but with inscriptions, Rojdi pottery, 0.70 m thick occupational deposit.
- Period of desertion—0.35 m thick deposit.

The location of the radiocarbon date giving a calibrated version around 2800 BC is interesting and seems to agree with my premise that Kutch was within the earliest phase of the distribution of the Indus civilization. Also the scheme I have offered explains why the Indus civilization must have had a long chronology instead of a short one.

In the field of early history I propose to take up only two issues. One

is the problem of 'state formation' in early historic India and the other is the issue of early historic urban growth in the context of the Deccan. These issues have long been discussed by Indian scholars, and I propose to put down my own observations on them.

As far as the process of state formation in early historic India is concerned, the concentration of archaeological sites in different parts of the Doab and Gangetic valley suggests that some kind of state structure must have existed from the late Harappan period onwards. The sheer density of sites in the Gangetic valley seems to suggest this. What is remarkable in this context is that not merely the Gangetic valley but the entire area of distribution of the traditional 'sixteen mahajanapadas' from Gandhara to the Deccan was well-covered by sites of different magnitude by the second half of the second millennium BC. The base of the regional political units must have been laid down by then, although it is a different matter whether these units represented 'chiefdoms' or states ruled by kings. Those who are familiar with India's political history must remember how H.C. Raychaudhuri (1953) cogently showed the correlation between later Vedic literature and early Buddhist literature as far as the growth of political units in the Indo-Gangetic divide and the Gangetic valley is concerned. I dare not offer any chronological sequence of this development, as Romila Thapar has done in *From Lineage to State*. Although her discussion is excellent within the parameters accepted by her, I cannot accept these literary parameters because we do not think that the literary traditions which have survived in the context of early India represent homogeneous or unitary texts of different clear-cut periods. However much the serialization of these texts and the picture of a chronological evolution of Indian society and economy may appeal to our love of harmony and neatly ordered succession of events, the postulated chronologies for these texts do not make sense in the light of the archaeological data. The picture of the growth of Harappan civilization in the Sarasvati valley in Cholistan, and its gradual absorption in, and positive effect on, the main flow of Indian cultural development, which I have presented in the present volume, does make some sense of the Indian literary tradition. I admit that this tradition is only composed of disparate strands of different periods, with which the generally accepted chronological frameworks of these texts do not bear any relationship.

The point I propose to outline in the context of the Deccan has been emphasized by Alok Parasher (1992). This is a hypothesis which makes one rethink about the oft-quoted premise regarding the influence of trade on the growth of urban centres in the Deccan. Parasher writes:

That a surplus had been generated by the well-settled communities of the central Deccan during the early centuries AD is evident enough from the structures they built to store it, as also the other manifestations of urban life. However, as delineated above, the early history of habitation and cultural evolution in this region had helped in gradually transforming pockets of the food-gathering economy particularly from the Megalithic phases of habitation. These have been generally found in close proximity of the early historical sites. The expansion of the agrarian base was therefore linked with the proliferation of early historical sites in the region. It is in this phase that it can be postulated that there was an increase in population. In the sites under discussion the maximum number of iron implements have been recovered from Peddabankur and Kondapur. The impact and the use of the iron technology must, nevertheless, be understood in the context of a limited ecological base, where because of the non-availability of fertile tracts, other than along the river, large scale agricultural operations were not possible. Village settlements thus continued to be dependent on other modes of production such as pastoralism, gathering and fishing. But what is particularly striking is that even small settlements in the mid-Godavari valley give evidence of the production of iron objects. In this way it would be possible to suggest that the existence of social groups, organized most possibly on kinship lines were involved in the craft production of smelting and forging of iron. Thus we submit that trade in these parts was stimulated not so much by the export of an agricultural surplus, but rather by the supply of iron objects and other related commodities, a process which began in protohistoric times (Parasher 1992: 475-6).

The emphasis is on craft-activity and agricultural expansion in the background of the early historic urban phenomenon in the Deccan. Trade was no doubt a sustaining factor but was perhaps not a catalytic one.

That there cannot be any mechanical one-to-one explanation of a phenomenon as complex as the growth of cities was directly driven home to us in the context of West Bengal. That the black-and-red ware settlement phase of the region merged into the phase of early historic cities is not in doubt but the point is that the black and red ware settlement phase itself comprises a history of about a thousand years. How much do we know of its developmental sequence except for some obvious inferences made on the basis of archaeological stratigraphy? The maximum size during this phase was 8-10 acres, but the early historic settlements of the region go up to 250 acres in extent and even this spread must have had a history of a few hundred years. Again, do we know much of this history? The point is that we have no answer to the question as to how such a drastic change in the settlement size was possible from the black-and-red ware to the early historic periods in the context of West Bengal. Moreover, detailed ground surveys can always throw up surprises regarding the

density and distribution of urban sites in a given area. For instance, we have only recently realized that there were at least ten early historic urban centres in the estuarine and coastal area of West Bengal.

It is imponderables such as these which make all hypotheses regarding early urban growth very tentative. The present volume has explained how tentative our range of data and explanation is in the context of ancient India.

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